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IRON TRADE REVIEW
STEEL

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(Abramsen Design)

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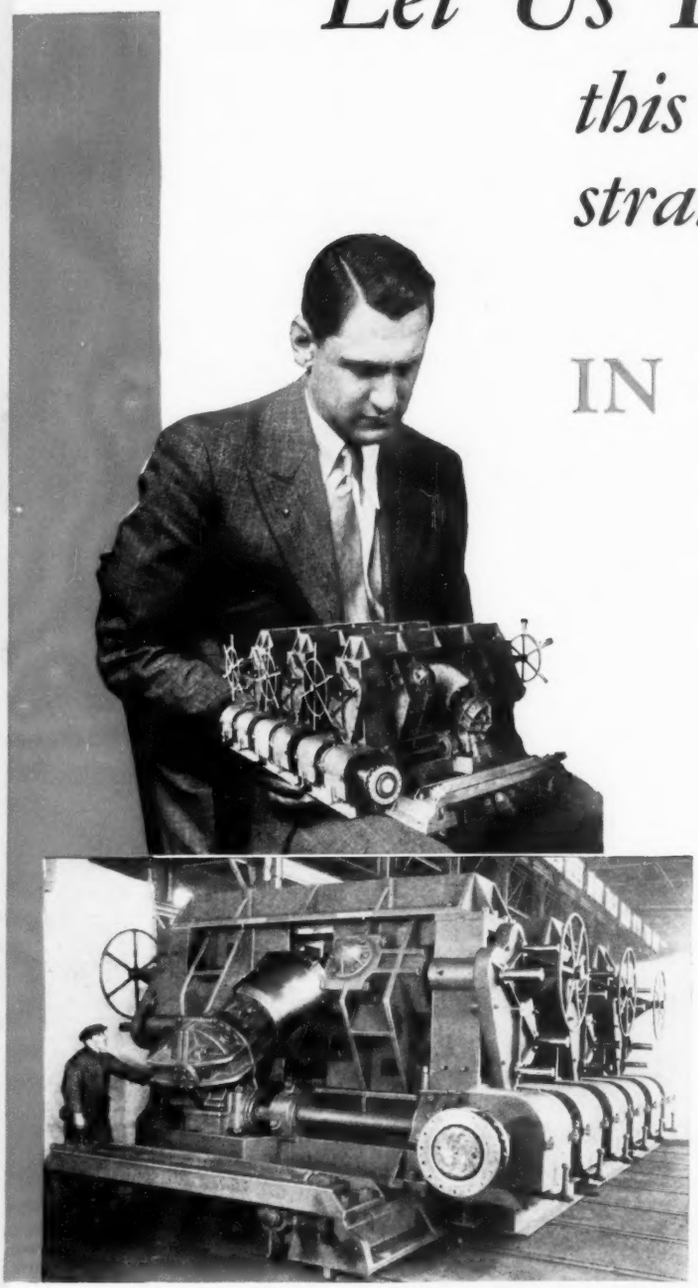

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Rolling Mills—Threading & Cutting-Off Machinery—Special Machinery—Iron & Steel Castings

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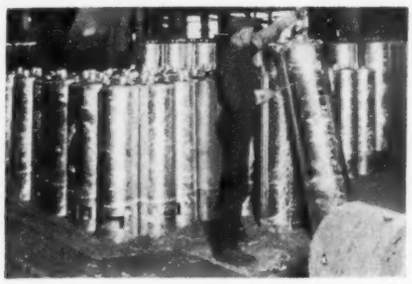

How to prolong the life of galvanizing kettles. Page 47.

THIS WEEK:

WHO will win the "fringe markets"? A certain material is supreme in its field; another dominates its fold. Between them is a no man's land—fringe markets—which both are free to explore and to serve. A writer on merchandising steel castings states the proposition forcefully in the article on page 50. What he says has a much broader application. If you lose in the "fringe market" of today, some of your "assured" market will be on the fringe tomorrow. Fight for the fringe, even if you lose.

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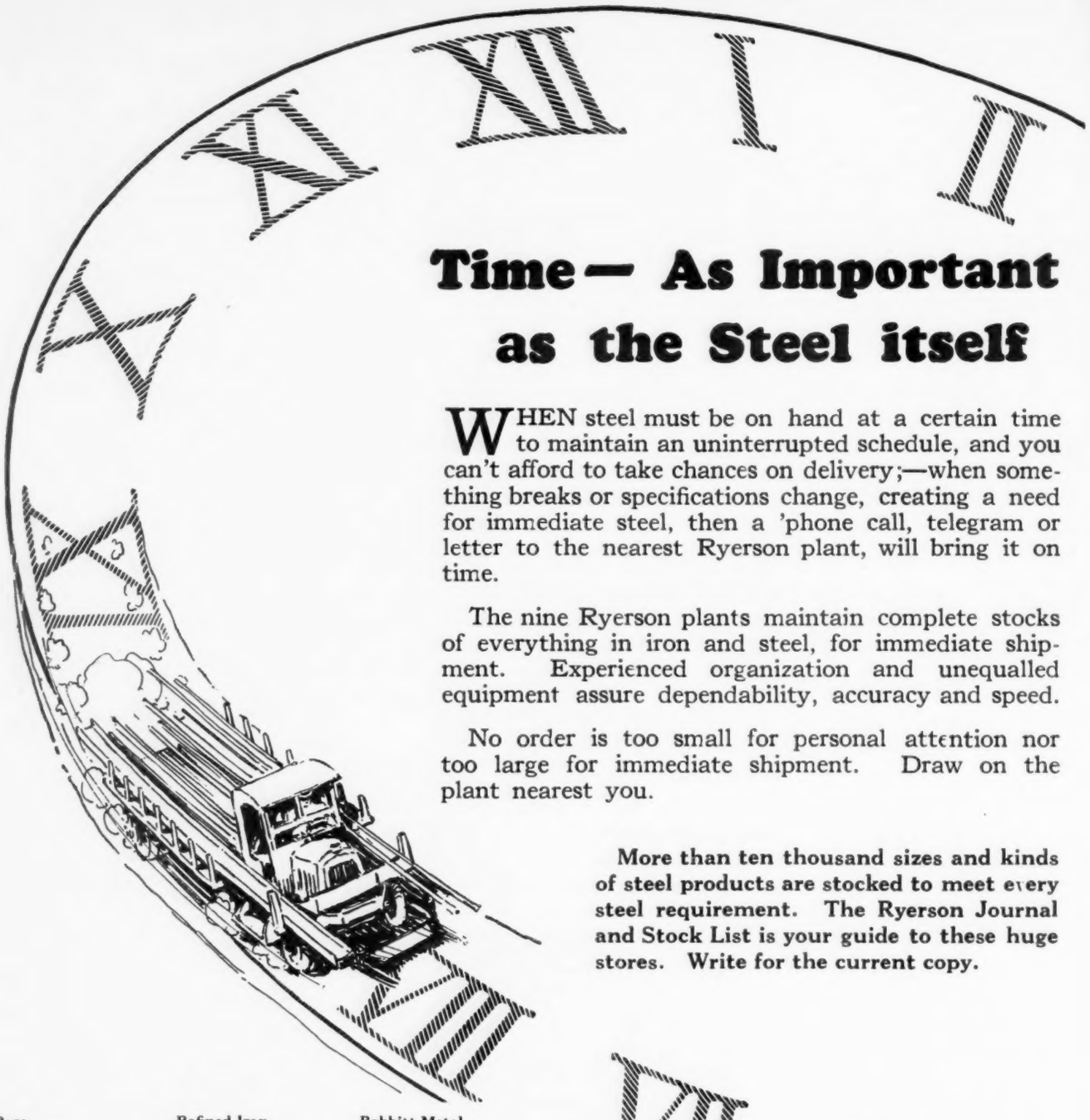

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Volume 87 Number 2

IRON TRADE REVIEW
STEEL

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

TARIFF tinkers are busy again. Scarcely three weeks has the new tariff law been effective, but already the flexible provisions are being flexed. Costs of producing pig iron at home and abroad are to be ferreted out by the tariff commission, with an increase in the duty of $1.12½ per ton a possibility. Smouldering resentment abroad against the new law has broken into full flame. Retaliation at the moment appears directed chiefly against the automobile industry. Page 27.

An automobile is no better than its cotter pins! Although most of these safeguards for nuts are so small they weigh many to the ounce, more than 5000 tons of low-carbon steel is required annually for their production. As many as four billion are made in a year, chiefly for the automotive industry, with automatic machines turning out 200 to 300 per minute. Page 52.

Much Talk, Little Action, on Rates

Mark Twain's famous quip about the weather applies as well to the railroad freight rate situation. When the interstate commerce commission made its mileage scale rates on steel products effective in eastern territory May 20 there were loud protests, but thus far few explosions. State actions are pending in Pennsylvania, Indiana and Illinois, directed at short haul charges, but the distance rates are effective by default. Page 23.

Steel Common, as Wall Street knows it, steadily enhances its position as an investment favorite. Despite the drastic shakeout in the stock market, beginning last October and continuing until last week, there are more common stockholders of the United States Steel Corp. today than ever. And although its price indicates extreme safety, the Corporation's preferred stock is held by a dwindling number of investors. Page 26.

Mussolini a French Steel Salesman

When Mussolini several months ago made faces at France he little thought he would be the cause of black shirts at French steelworks. But France, stung by Fascist threats and still jumpy from the World war, is now looking to

—World Wide Photos

Night or day there is no mistaking that the cap on the new Chrysler building, New York, 1046 feet above street level, is of bright nickel-chrome steel. The salt air will afford a good test of this new steel.

her frontiers. To the south against Italy and to the east against Germany she is planning a chain of modern forts. Steel for these border safeguards is the largest prospective business before the French steel industry. Page 106.

Steel plates at Pittsburgh at 1.20c, basic iron in the Mahoning valley at $12.50, heavy melting steel at Chicago at $12—that's what Congressman McFadden, chairman of the house banking and currency committee, foresees. Commodity prices are headed toward 1913 levels, with a good push from important financial houses speeding them on their way, he fears. Page 26.

Perhaps a Steel Castings Week

Advertising and merchandising are not miracle workers—they cannot magically transform a steel casting into an article of commerce that millions will rush to buy—but when properly directed they can mold public opinion and stimulate business. Today steel castings are of higher quality, better finish, possess higher physical qualities and are more satisfactory than ever before and their manufacturers must act concertedly to bring to the industry the recognition it deserves. Page 26.

Using two motor-generator sets, 20 workmen in 16 working days laid and arc welded some 99,700 square feet of copper-bearing steel roof deck on a new mill building recently. It marked the first time that roof deck has been welded to purlins on a large scale. The speed of the work compared favorably with the old method of clipping. Page 60.

Sheet & Tube Secrets Are Revealed

Staid old Youngstown Sheet & Tube, long deemed the most prudish of Mahoning valley independents, stands revealed as a coquette. With Republic, Inland, Truscon and Acme it has flirted in the past few years, and then when it did arrange a match with Bethlehem it was hailed into court. Much interesting steel history is being brought out at the merger trial at Youngstown. Page 25.

Statistics on steel production are all things to all men. There is little cheer in apprehending that each month since February the rate of ingot output has been declining, and that excepting last November and December—the tail end of the 1929 slide—June was the poorest month since December, 1927. On the other hand, steel plants averaged 76.67 per cent operations in the first half year, and 76 per cent today is equal to at least 85 per cent two years ago. Page 30.

Hot galvanizing sheets, pipe, hardware and formed products assists them to resist the ravages of the elements but it is tough on the galvanizing pot. At and above the galvanizing temperature zinc has a corrosive action upon the pot which reduces a normal life expectancy of pots from 12-18 months to a few months, sometimes a few days. It's an interesting study to probe into the causes of the failures. Page 47.

Next to the snaking of hot strip on the cooling bed, there are few steelmaking operations more interesting than the maneuvers of a flying shear. A new rotary shear for cutting strip, skelp, rounds and flats is equipped with a flying cutter coupled direct to a mill-type motor and an anvil roller driven by a separate motor at the same speed as the material being cut. Page 56.

Insiders Are the Least Optimistic

Steel markets continue to drift aimlessly. Outsiders believe the situation is turning, that improvement is near, but insiders are noncommittal, refusing to grow optimistic until the railroads and automobile manufacturers again are substantial buyers. It is not a good sign that pig iron is piling up at the furnaces and that Lake Superior iron ore mines are curtailing. Page 75.

Nitriding—the gangsters of Chicago would spell it night-riding—will again be a chief attraction at the National Metal congress to be held at Chicago, Sept. 22-26. Including a session on sales methods and problems, there will be 32 technical papers—for those who attend the technical sessions. Page 58.

A constructive force for the maintenance of industrial democracy—thus was the trade association of today described at the meeting of the Steel Founders' Society of America at White Sulphur Springs, W. Va., June 26-27. Experts told how the society could improve its usefulness, suggesting means applicable to almost all associations. Page 54.

Mileage Rates Are Censured, but Only States Act

WHEN railroad freight rates on steel products in transit east of the Mississippi and north of the Ohio and Potomac rivers went on a mileage scale basis May 20, producers and consumers alike stormed at the interstate commerce commission's edict.

Particularly in the case of short hauls, on which many rates were doubled or more, was objection raised. But nearly sixty days have elapsed since the formal inauguration of the new rates, and there is little formal protest against what was declared to be the most revolutionary departure in ratemaking in the history of the steel industry.

Before the commerce commission at Washington no action is pending, and so far as the commission is informed none is in immediate prospect. The major interstate rates, governing traffic from Pittsburgh to Detroit and Chicago, from Cleveland to Detroit, and from Youngstown to Detroit and western points, continue applicable as ordered by the commission.

Steel Centers Show Resentment

In regard to intrastate rates, however, events are moving. At Pittsburgh, Wednesday, the Pennsylvania public service commission was to open its hearing on protests against the sharp rise in intrastate rates. In Indiana and Illinois the new intrastate rates, based on mileage scales, have been suspended, with no hearings yet scheduled.

Pittsburgh district steel producers, severely handicapped by the drastic increases in short hauls, were to present their case to the state public service commission, but in the meantime have acted to protect themselves. No capital is being made out of it, because the railroads last year were the best customer of the steel industry, but increasing resort is had to the rivers and to trucks.

United States Steel Corp. subsidiaries do considerable interplant shipping and are taking advantage of the rivers for transportation as much as possible. Carnegie Steel Co. has been hauling plates in 15-ton lots from its Homestead works to the National Tube Co. plant at McKeesport by truck. The movement of shapes from Homestead to the American Bridge Co. at Ambridge is being carried on by barge whenever practicable. Jones & Laughlin Steel Corp., which suffers an increase of 128 per cent in freight rates from Pittsburgh to its Aliquippa works, is making more extensive use of its barges and car ferries in moving steel products from the South Side plant to Aliquippa.

Opposition grows in Chicago. No complaints have been filed before the interstate commerce commission except that of James B. Clow & Sons, which joined with the United States Pipe & Foundry Co. in attacking the mileage scale rates as applying on cast iron pipe and cast pressure pipe.

Much tonnage between Chicago and Milwaukee has been diverted from rail to water in the last few weeks. This has been attributed largely to the new rates. Some estimates are that 75 per cent of the finished steel items covered under the mileage scale rates, normally moved by rail, are being delivered by boat.

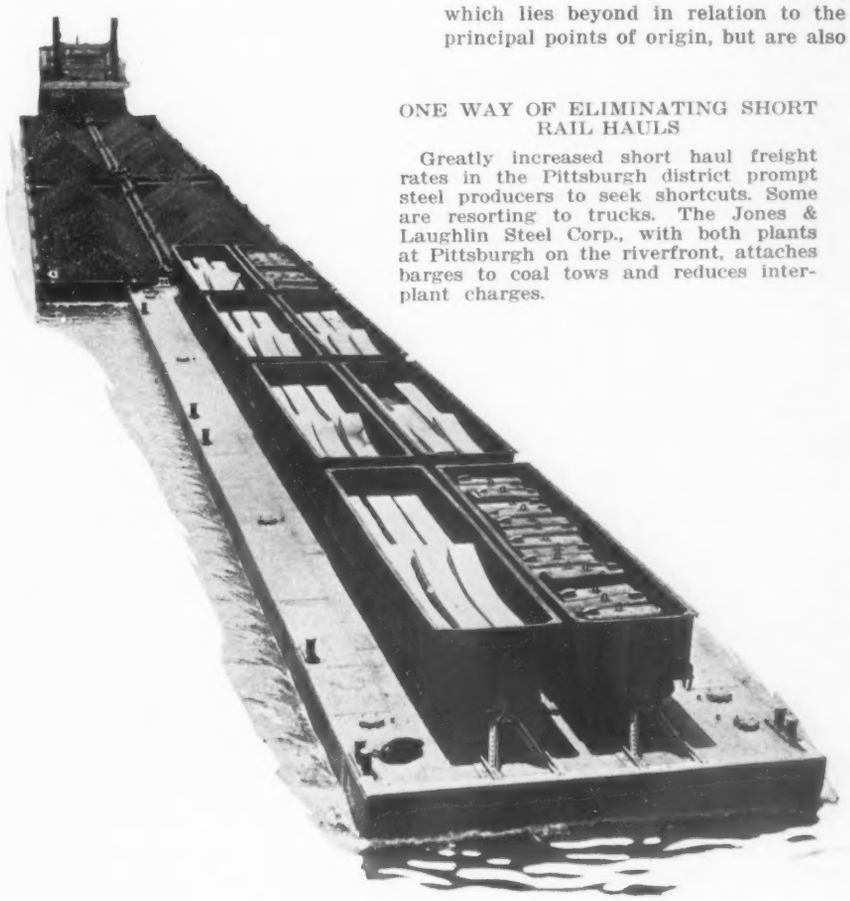
The rate from Chicago to Milwaukee now is 14½ cents, against 9½ cents under the old rate structure. It is pointed out that trucking of steel likewise has become more active, and that when the navigation season closes, truck deliveries may be further stimulated.

As illustrative of the alleged inflated short haul rates under the new structure the rate between Pittsburgh and St. Louis is cited, which is now 39 cents for a distance of 604 miles. From Chicago to St. Louis, the rate is 25½ cents for 274 miles. The rate from Chicago to Milwaukee, a distance of 85 miles, is 14½ cents, or only 11 cents lower than the Chicago-St. Louis rate. The lack of flexibility of the mileage scale rates, particularly short haul, is working to the disadvantage of the railroads as well as the shippers, according to claims of some interests.

There is some opinion at Washington that the recent decision of the United States Supreme Court in the deciduous fruit case, which was supposed to have undermined the validity of the Hoch-Smith act, has no effect on the new rates on iron and steel. It is believed that the new rates were based not on the Hoch-Smith resolution but on an unquestioned section of the interstate commerce act.

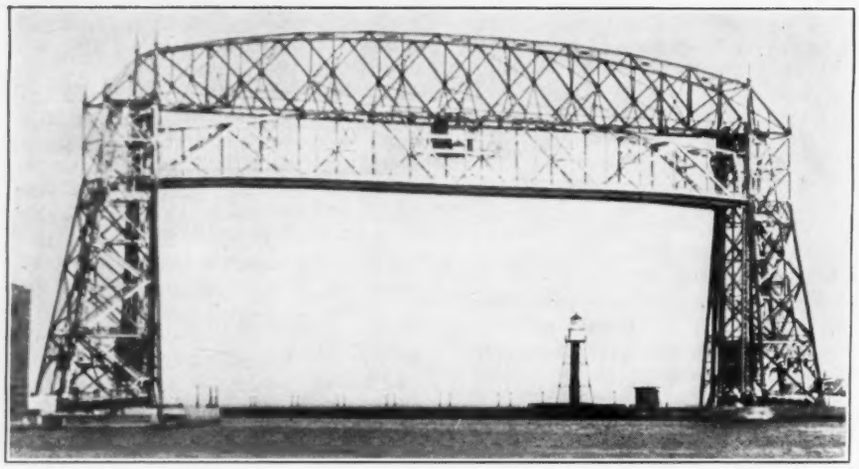
At a hearing before the commerce commission in Newark, Northern New Jersey steel interests are protesting over what they claim to be the injustice of being included in the New York City rate zone, a status established May 20.

Located in this zone they not only take the same rate as New York, which lies beyond in relation to the principal points of origin, but are also



ONE WAY OF ELIMINATING SHORT RAIL HAULS

Greatly increased short haul freight rates in the Pittsburgh district prompt steel producers to seek shortcuts. Some are resorting to trucks. The Jones & Laughlin Steel Corp., with both plants at Pittsburgh on the riverfront, attaches barges to coal tows and reduces interplant charges.



NEW GATEWAY TO DULUTH AND SUPERIOR DOCKS

Between one-third and one-half of the Lake Superior iron ore smelted in lower lake furnaces passes under this bridge at Duluth. The familiar "basket" has been eliminated and a lift span weighing 875 tons substituted. The towers are 173 feet high, the span 30 feet wide and 400 feet long.

subject to an additional charge for special costs of lighterage, trucking and so forth in New York, services they claim they do not require. There is also an undue burden with regard to outgoing shipments South or inland or into New England, it is charged.

This dominates all other developments, and in the main, the new rates have gone into effect without great confusion. However, there are some confusing features. One arises where the rates from a common point of origin to a destination reached by two or more carriers are not the same via all routes. This, it is said, is due in many cases to different lines selecting different base points and not being careful in including all common points

Commission Voices Opinion on Eastern Class Rates

Washington—Interstate commerce commission has rendered opinions in the eastern class rate investigation and part 2 rate structure investigation of the western trunk line class rates.

Iron and steel articles are not specifically mentioned in the first decision but in the latter these articles are discussed. In this connection the commission says in part:

"At present many important movements of iron and steel articles are on the full class basis. The record presents no sufficient warrant for rates thereon other than a reduction of the class structure. There is no indication that the industry is depressed. We are not convinced that iron and steel rates, in regard to the present class rates, are already so high that no increases therein should be permitted when a materially higher class rate structure is prescribed. We are of the opinion that the basis prescribed in the southwestern cases, namely 32.5 per cent of class 1, should be prescribed in the proceedings."

Steel Constructors Announce Available Speakers

The speakers bureau of the American Institute of Steel Construction, New York, has announced the names of five members of the national staff and twelve district engineers who are available as speakers for meeting of all sorts, class room work or any other such gathering where such a service might be needed. The members of the national staff are Charles F. Abbott, executive director of the institute; Lee H. Miller, chief engineer; George E. J. Pistor, treasurer and a member of the firm of Hay Foundry & Iron Works, New York, F. H. Frankland, director of engineering service and Gilmore Iden, director of public relations. In addition to the speakers, the institute has available on request a number of motion pictures and lantern slides which illustrate various phases of the steel construction industry. A list of speakers with a short sketch of each and a list of the pictures and slides is given in the booklet "Speakers Bureau," published by the institute.

Hay Foundry & Iron Works 100 Years in One Family

Hay Foundry & Iron Works, Newark, N. J., attains a new distinction this year, a full century of existence, with the further feature that it has been under management of the same family the entire time. It was founded by James Bruce Hay June 1, 1830, as a foundry, and has been handed down in direct lineage until now it is managed by his grandson, J. Lewis Hay, and two great-grandsons, John L. Hay Jr. and Francis W. Hay. The firm has issued a brochure in commemoration of the centenary, illustrated with pictures of those who have directed the institution and giving a history of the family.

The company's life parallels the building history of New York as it has built many of the important skyscrapers in Manhattan. Among the modern buildings for which it erected the structural steel frame are the American Radiator building, Transportation building, Bank of New York & Trust Co. Saks Fifth avenue, 120 Wall street, Heckscher building, 1 Park avenue, 1440 Broadway, Textile building, American Book Co. building, Brooklyn Municipal building, Newark City Hall, Bronx Terminal Market, Lord & Taylor store, Plaza hotel, Farmers Loan & Trust building, Telephone building on Willoughby street, and others.

Purchases Motor-Generator Set for Universal Mill

An order for one of the largest flywheel motor-generator sets on record recently was placed with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., by the Illinois Steel Co., South Chicago, Ill., for use in a new 44-inch reversing universal slabbing mill. The set consists of three 3500-kilowatt, 700-volt direct-current generators coupled to a 6500-horsepower, 25-cycle induction motor with an 180,000-pound flywheel 15 feet in diameter.

The set will have a continuous rating of 10,500 kilowatts at 700 volts and will carry peak loads of about 40,000 amperes. A unique feature of this application is that all three generators will be operated in parallel by cross-connected differential and cumulative compound series fields. The set and motors will be installed in a substation using a closed recirculating ventilating system.

Builds River Coke Terminal

Cincinnati—The West Virginia Coal & Coke Corp. has bought 500 feet of Ohio river frontage here from the Baltimore & Ohio railroad. The corporation, through John C. Cosgrove, president, reports plans to install equipment costing $350,000 for river to rail handling of coal and coke. A subsidiary, the Ohio River Co., operates a large fleet of steamers and barges from Huntington, W. Va.

Interstate commerce commission has found the freight rate on relaying rails, in carloads, from Fullerton, La., to Beaumont, Tex., unreasonable but not unduly prejudicial.

Campbell Relates Sheet & Tube Merger Efforts

JAMES A. CAMPBELL, chairman of the Youngstown Sheet & Tube Co., took the stand at Youngstown, O., July 8, when the trial of the various suits aimed at frustrating the merger of the Sheet & Tube company with the Bethlehem Steel Co. was resumed.

Mr. Campbell, placed in cross-examination immediately by Harry Crawford, of Eaton-Wick counsel, explained some variances in his deposition by saying "there is so much talk about this merger business that I don't know sometimes whether I am on foot or on horseback."

He went on to acknowledge that a "position of dignity" was offered him by Eugene G. Grace, president of Bethlehem, between the Sheet & Tube directors' meeting and the calling together of stockholders in special meeting. Nothing, however, was said nor intimated concerning salary or its equivalent. Charles M. Schwab, chairman of Bethlehem, hoped to keep the Sheet & Tube organization intact if it went with Bethlehem said Mr. Campbell from the witness stand.

The Sheet & Tube chairman, making a calm and cool witness, went on to testify to two negotiations with Inland Steel Co., Chicago, in which Sheet & Tube was to dominate and a new name likely would have been given the resulting company. Merger had previously been talked with Republic Iron & Steel Co., Truscon Steel Co., and Acme Steel Co.

Acknowledges Merger Proposals

Abolition of the Pittsburgh base and other trade changes made it imperative that his company merge with someone. Mr. Campbell acknowledged taking all responsibility for Bethlehem merger proposals and he and Mr. Grace, when the advisability of the union of the two companies was first discussed at New York, January 2, agreed that the government would not oppose the deal because the two plants were not competitors and had their plants widely separated.

It was not until six days later that Mr. Campbell told the Blocks of Chicago, brother owners of Inland Steel Co., that Sheet & Tube did not want to go in with their company. Mr. Campbell continued, offering testimony that he had never told Cyrus Eaton, of the Bethlehem proposal that Mr. Grace made, although the proposal was discussed with Samuel Mather and H. G. Dalton, both directors of Sheet & Tube.

Upon resuming the stand in the afternoon session, Mr. Campbell testified that his company had made no mistake in taking over the Steel & Tube unit at Chicago in 1923, primarily a move to make money and not to gain entrance into western territory. These works have since been profitable after improvements in tin plate and bar mills.

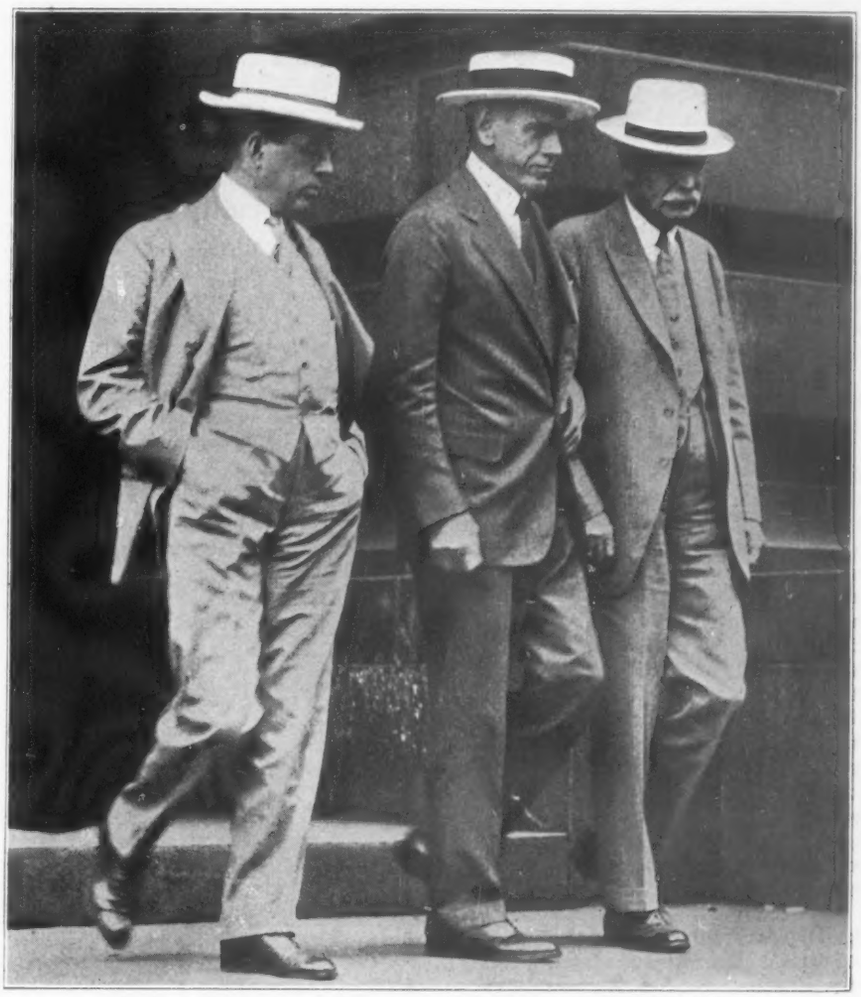
"Bethlehem manufactures rails and structurals which we do not," Mr. Campbell went on, "and they make some few things we do not. Inasmuch as the plants were widely separated we exchanged production cost figures, especially on tin plate."

Mr. Campbell further gave evidence that he had seen some of the Bethlehem plants years ago and at one time had been a director of Lackawanna Steel Co., now a Bethlehem subsidiary.

"Officers of the Inland Steel Co., Chicago, wanted the deal with us called off," continued Mr. Campbell, "and due to some of the stockholders who were dissatisfied we agreed, since we wanted none of the latter with us. Later, at the solicitation of Mr. Eaton, we tried again to merge with Inland about the middle of 1929, but again failed.

"The first proposal with Inland was on an exchange of 63½ to 37½ but the latter proposal was 60 to 40 and that was not enough. The last negotiations with them did not reach the stage for directors' action and early in January I told Mr. Block that we would decline. But we thought we must merge with someone to protect our stockholders and employes.

"In January of 1930 I acted on the suggestion of Samuel Mather and H. G. Dalton and talked with Eugene Grace on the advisability of combining with Bethlehem. These combinations are based largely on earnings. I am willing to take the full



FIGHTING FACES ON STEEL EXECUTIVES FAVORING MERGER

Left to right, R. E. McMath, vice president, Bethlehem Steel Co.; E. G. Grace, president of Bethlehem, and James A. Campbell, president, Youngstown Sheet & Tube Co.

responsibility for these Bethlehem merger proposals, and on Jan. 2 I talked with Mr. Grace since Sheet & Tube was free to discuss mergers.

"Therefore, on Jan. 28 I talked with both W. G. and Samuel Mather on the Bethlehem deal. I never talked it over with Cyrus Eaton, but W. G. Mather told him about it on March 7. Later Mr. Eaton asked permission to see me but on advice of counsel I refused since he then had organized his committee to oppose the merger. I was not then flirting with both Inland and Bethlehem at the same time."

At this point Mr. Campbell differentiated between a conference and a negotiation to say that at the former there is only general talk, while at the latter there is close discussion of share prices and allied data. A further statement was made by the witness in saying that his company did not carry an item of good will in its annual statements, whereupon Mr. Crawford of the Eaton counsel inquired if he knew that millions put down as good will were covered up in the Bethlehem financial statement under names of subsidiaries. This is the first intimation of what the auditors employed by Mr. Eaton to search the Bethlehem books appear to have found, and upon which by an order of court they are working.

Campbell Wants Fight Ended

On Jan. 16 Mr. Grace and Frank Purnell, president of Sheet & Tube, employed Price, Waterhouse & Co. to go over the books of both companies and Mr. Campbell testified today that he accepted the terms proposed by these auditors as fair, adding, "our stockholders got additional millions after we increased the terms from 1 1/5 to 1 1/3 of Bethlehem stock for one share of Sheet & Tube."

The entire merger proceedings, according to the Sheet & Tube chairman, were wanted to be closed quickly for as he explained it, "although we have not borrowed in 16 years and have eleven millions, that is not much for a big business to work on and pay out five millions in dividends. Due to this turmoil we have had to suspend work on our continuous sheet mill."

Mr. Crawford asked Mr. Campbell to bring in expense figures for the proxy merger battle and at the court's ruling both sides are to expose a complete report of such expenses. The court was adjourned until Wednesday, with Mr. Campbell still on the stand.

Mr. Campbell testified that he will be 76 years old next September, but he stood the strain of an all-day examination very well, occasionally offering quaint remarks which convulsed the court, and declaring at the end that he was as fresh as in the morning.

Commodity Prices To Decline to 1913 Level, Congressman Forecasts

COMMODITY price levels are being reduced to practically the 1913 basis, and wages are being reduced through the creation of a labor surplus by the slowing-up of production to an extent which has thrown 4,000,000 or more of our people out of work."

So charges Representative Louis T. McFadden, of Pennsylvania, chairman of the house banking and currency committee at Washington and for eight consecutive terms a member of congress, in an attack upon alleged Wall Street manipulation of finance. He declares:

"We must realize we are going to a new price level much lower than that which has prevailed during the past decade. Unemployment and hardship always bring unsettlement in the public mind."

Prices averages for 1913, which Representative McFadden says are in store, show steel bars and shapes at Pittsburgh ranged between 1.25c and 1.45c, steel plates 1.20c to 1.50c, galvanized sheets 2.85c to 3.50c, and plain wire 1.35c to 1.60c. Today, bars are about 1.70c, Pittsburgh, plates and shapes 1.65c to 1.70c, galvanized sheets 3.15c and plain wire 2.30c.

Realizes Security Profits

Continental Shares Inc., Cleveland investment trust headed by W. H. Burwell and Cyrus S. Eaton, has accrued profits amounting to about $15,000,000 through the sale of securities since March 31. On 2,407,000 common shares this amounts to $5.50 a share. Assets of the company at approximately $140,000,000 show an increase of about $10,000,000 in the second quarter.

Corporation Stockholders

The number of common stockholders of the United States Steel Corp. was the highest in history when 129,626 holders were recorded at the closing of books for the June dividend. An increase of 5557 stockholders has been made over the previous high in the Corporation's 29 years existence, set in the first quarter of 1930. For successive quarters since fourth quarter of 1928, increases in number of holders have been noted. May dividend on the preferred stock went to 80,646 holders, compared with 61,312 in February and contrasted with 64,791 for May, 1929.

Electric Orders Lower

General Electric Co., Schenectady, N. Y., reports orders booked for second quarter totaled $99,916,027, compared with $119,351,248 for the same period of 1929. For six months ending June 30 total orders were $190,313,758, compared with $220,716,456 for the first six months of 1929. Orders for 1930 do not include radio sets or tubes, which were included in 1929 totals.

General Electric Workers Adopting Insurance Plan

Employes of various plants of the General Electric Co., Schenectady, N. Y., have been voting for the adoption of the unemployment insurance plan which provides a fund to be made up equally through payments by employes and the company. Employes were given a free hand to adopt or reject it.

Ninety-two per cent of the eligible employes at the Bridgeport, Conn., works and 88 per cent of those at the New Kensington, Pa., works voted in favor of it. Pittsfield, Mass., workers voted for it by more than 65 per cent; Philadelphia works by 73 per cent; Fort Wayne, Ind., and Decatur, Ill., plants by 73 per cent. Other works have either voted favorably or are about to act on the proposal. Its adoption by practically all of the works is practically assured.

Offer Steel Foundry Bonds

Final step in the consolidation of the Hubbard Steel Foundry Co., East Chicago, Ind., the Duquesne Steel Foundry Co., Pittsburgh, and the Wheeling Mold & Foundry Co. as the Continental Roll & Steel Foundry Co., Chicago, will be the offering of $4,000,000 in first mortgage bonds. It is claimed that the new Company is the largest producer of miscellaneous steel castings in the United States.

D. G. Kerr Optimistic on Iron Ore Inspection

"It appears that the iron and steel industry will experience a fair average business this year," D. G. Kerr, New York, vice president, United States Steel Corp., is quoted as saying on a recent inspection trip of the corporation's iron ore mines in the Lake Superior district. "This will be reflected in a corresponding manner in the ore industry." Independent mine operators have estimated total shipments this year will be about 50,00,000 tons, against 66,000,000 last year.

Tariff Commission Orders Pig Iron Duty Investigated

LESS than three weeks after the new tariff went into effect, July 18, certain duties, including pig iron, have come under the scrutiny of the tariff commission for possible change under the flexible provision of the law. Acting on a resolution adopted by the senate the commission has ordered an investigation of the cost of manufacturing pig iron in the United States and foreign countries, to determine if the duty of $1.12½ is fair to the American producers. Senate resolutions also asked the commission to examine duties on a number of other commodities, including wire fencing, wire netting and bells. Senator Reed, Pennsylvania, offered the amendment getting in pig iron.

The commission made an investigation of pig iron costs in 1923 and 1924, but conditions have changed materially since then, according to its experts. The full scope of the inquiry has not been determined because President Hoover is expected to make a change in the membership of the commission within 60 days, as provided by the tariff law.

It was on the results of the 1923-24 investigation that the American Pig Iron association and eastern producers waged and won their fight in 1926 for an increase of the duty 75 cents, then in effect, to $1.12½, under flexible provision of the Fordney-McCumber tariff. The President was limited by the law to an increase of 50 per cent.

When the new tariff was considered last fall by house and senate committees pig iron producers made a strong plea for a duty of $3 a ton. The house voted to make the regular schedule $1.12½. The bill later emerged from the senate with pig iron cut back to 75 cents. Subsequently house and senate conferees restored the duty to $1.12½. This figure now can be raised under the flexible provision of the law. A 50 per cent increase under the flexible clause would result in a duty of $1.687.

Imports of pig iron in 1929 amounted to 147,763 gross tons, and in the first four months of this year to 41,660 tons.

Italy Raises Duty on Autos; British Banks Restive

What appeared to be a subsidance of sentiment in Europe over the new American tariff now proves to have been merely the lull before the storm.

Italy, as of June 27, raised the duty on foreign automobiles 100 to 167 per cent. Since a large majority of imports are American, there is no doubt which nation is the target, but the French fear they will also be pinched and are critical because Italy acted alone.

British banking and financial institutions, including the noted Bank of England, have issued a call to politicians to place a tariff on all imports save those from dominions and possessions. This stand is regarded as the most important declaration in history against Britain's historic policy of free trade.

Meanwhile, Ogden L. Mills, undersecretary of the United States treasury, has arrived in Paris on an economic mission for President Hoover. Speculation has it that Mr. Mills is to look into the tariff situation and report his reactions to the President.

Better Building Indicated

Definite improvement in the construction industry in the last half of 1930 is indicated by the midyear survey of the Universal Atlas Cement Co., Chicago, subsidiary of the United States Steel Corp. Of 163 sales and technical representatives in 42 states, 124 answered "better" or "no change" to the question, "What are construction prospects for the rest of the year?" Only 39 representatives answered "worse." The survey shows little sentiment for or against the new tariff.

Says Prices Warrant Buying

Industrial activity can be stimulated if business papers will endorse the buying of commodities at present price levels, states Frederick C. Crawford, first vice president and general manager of Thompson Products Inc., Cleveland. Many commodities, according to Mr. Crawford, are now priced at bargain levels and corporations could purchase and be in a position to profit from a stimulus to business that would follow the entry of large purchases into the market.

To Put 1000 on Research

A. O. Smith Corp., Milwaukee, making automotive frames and welded pipe, is erecting an engineering and research building to be devoted entirely to industrial problems. Research facilities for a personnel of about 1000 are being planned, for developing new manufacturing processes. Structural steel already has been let for the project.

UNUSUAL CONSTRUCTION BARS PLANT NOISES

What appears to be the tranquil office of a bank president is, in fact, part of the new general offices of the Columbus Bolt Works Co., Columbus, O. Dirt and noise of the adjacent plant are barred by heavy fireproof construction, 4 inches of air between double windows, rich carpets, heavy draperies and conditioned air. J. R. Poste is president and general manager, H. A. Mason secretary, S. H. Barrett treasurer.

Automotive Exports Fall with Production

The total valuation of all automotive exports for May amounted to $31,619,047, compared with $37,443,661 for the preceding month, according to P. R. Mattix, automotive division, department of commerce. The reduction in shipments to overseas markets is in keeping with the slackening in manufacturing activities of the chief producers in this country, and, while the number of units shipped during May were considerably lower than for the corresponding month of last year, the ratio of exports to production showed a slight increase.

Shipments for the first five months of 1930 were valued at $172,978,489, compared with $299,399,551; $213,770,339, and $190,616,428 for the January-May periods of 1929, 1928 and 1927 respectively.

Shipments of passenger cars and trucks, amounting to $18,349,162, were $4,690,545 below the April total of $23,039,616, and thus were responsible for practically the entire difference which exists between the total April and May valuation. Passenger cars in the low priced range were reduced considerably and male up one-half of the total decline from the April figure.

Canada, Japan and Belgium were the three leading passenger car markets during May, with the other leading purchasers generally showing a falling-off in demand. Truck requirements were also lessened with Australia, Spain, and Denmark as the heaviest buyers. The average passenger car and truck valuation for the month was $705 and $667 respectively.

Industries' Coal Stocks Lower Than Year Ago

Stocks of bituminous and anthracite coal in hands of industries in the United States June 1 amounted to 29,824,000 tons, or 27 days' supply, based on consumption of 34,685,000 tons in May. The coal committee of the National Association of Purchasing Agents Inc. reports that stocks are lower by 1,250,000 tons than a year ago.

The coal supply, however, is one day higher than a year ago, due to the fact consumption in industries is 7 per cent lower than a year ago. Steel mills had 33 days' supply on hand June 1.

Production of bituminous coal in May amounted to practically the same as in April, being close to 36,000,000 tons. The committee believes there will be a slight increase per month as the summer progresses.

Alaska, purchased in 1867 for $7,200,000, last year yielded $16,066,000 in minerals, making total mineral output of the territory $615,501,000 since 1880.

Five-Month Implement Exports Top 1929

Shipments of agricultural implements from the United States during the first five months of 1930 amounted to $71,199,136, compared with $60,027,331, a gain of $11,000,000 or about 19 per cent, according to the commerce department's agricultural implements division. The gain was recorded during the first three months, exports during April falling off by some $600,000 and during May by about $1,660,000.

The $11,000,000 increase in five months exports is accounted for principally by large gains in shipments of tractors and parts. Wheel tractor shipments, which in the first five months of 1929 amounted to $25,118,196, rose to $30,328,159. The most popular type of wheel tractor was, as usual, the 15 to 32 horsepower model, which showed a gain of more than $2,000,000. The 33 and over belt horsepower type gained almost $2,000,000 while the 15 and under belt horsepower type recorded a gain of 1,000,000. Wheel tractors less wheels gained approximately $300,000.

Tracklaying tractors recorded a satisfactory gain in exports, shipments during the first five months amounting to $3,700,000 more than in the corresponding period of 1929. Tracklaying tractors less tracks showed a gain of about $170,000 while exports of engines for tractors recorded a decrease from $100,000 in 1929 to $62,000 in 1930, the only decrease in the whole tractor group. Shipments of parts and accessories for tractors amounted to $8,330,134 in the first five months of 1930 as compared with $4,831,602 in the same period of 1929.

Coke Screening and Sizing Plant Embodies Latest Developments in Design

A NEW coke screening and sizing plant recently placed in service by the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., embodies the latest developments in the preparation of coke. The best design and most convenient arrangement for operation have been incorporated in the assembly of conveyors, screens, crusher, loading, electrical system and track layout. Coke for industrial and domestic uses, from the largest sizes to breeze can be loaded rapidly. Six cars can be filled simultaneously with various grades of coke. The plant was built by the Semet-Solvay Engineering Corp., New York.

Vancouver District Steel Plant Is Projected

The Coast Range Steel Co. Ltd., Vancouver, B. C., is planning the construction of a steel plant in the Vancouver district at a cost of $23,000,000.

The company owns extensive ore property on Texada Island, B. C., 70 miles west of Vancouver. Nearly 7,000,000 tons of ore have been blocked out averaging over 60 per cent iron content.

Limestone and coal are within easy access to the site of the proposed steel plant. The company expects to sell iron ore to Japan and tin plate along the Pacific coast.

Officials of the Indiana Ornamental Iron & Wire Works, Indianapolis, announce the company has had a busy season since the first of the year, working nearly night and day.

Stability of Wage Rates Encouraging for Labor

THE current wage situation does not disclose any ground for pessimism in regard to the future economic status of American wage earners, according to the National Industrial Conference board, New York. A survey by the board substantiates what has been said about the stability of wage rates, while earnings have been reduced due to a reduction in the number of hours worked.

"What the trend will be in the near future cannot be predicted," the board says. "It may be safe to assume, however, that whatever wage changes may occur will be found more in weekly rather than in hourly earnings, as past experience has taught that when adverse business conditions make reductions in payrolls necessary curtailment in hours and various operating economies are preferable to drastic reductions in wage rates."

The board notes that earnings were slightly less favorable during the first five months of 1930 than at the end of 1929. Since October, 1929, average hourly earnings have varied within a margin of only half a cent, but average weekly wages continued to fluctuate during the early months of 1930, and in May were approximately 8 per cent below the figure for October.

The decline in average weekly earnings was primarily due to a reduction in the hours of work per week, the average number of hours actually worked per week being about four less in May than in October.

Employment declined steadily, except for a slight temporary revival in February. In May it was over 10 per cent lower than in October.

Incentive Systems Good, Where Applicable

Incentive systems of wage payment where applicable generally result in increased production, higher earnings for labor and lower production costs, a National Industrial Conference board survey discloses. In small plants cost of installing and maintaining records greatly outweigh expected advantages. Of 1200 plants selected at random for the inquiry, more than 50 per cent of those with less than 150 employes each adhere to a time wage. On the other hand, some form of wage incentive is applied in approximately 97 per cent of the plants having more than 1500 workers each.

Reports from manufacturers who have adopted the piece wage plan indicate output has been raised 10 to 400 per cent, earnings of labor 10 to 100 per cent, and unit costs reduced 10 to 50 per cent. In highly mechanized industrial operations the advantage of an incentive wage method is minimized as the rate of work is set by the machine.

"With the expensive machinery and elaborate equipment of modern industry, inefficiency among workers is a clog upon management," the board concludes.

New York Still Open Shop

Efforts to settle the 25-year controversy over the open shop in the structural steel industry in New York have again been abandoned. They were initiated by former Governor Smith, identified with the new Empire State building. A suggested agreement was interpreted by the union to include northern New Jersey, at which New York erectors balked.

Rival Unions Claim Credit for Coal Strike

Who called a strike of coal miners in Monongalia county, W. Va.? "We did," says the National Miners' union. "We accept full responsibility," counter the United Mine Workers. The two rival groups are in a contest for the credit. United Mine Workers refer to the others as "so-called communists, brought in for the purpose of beating down wages."

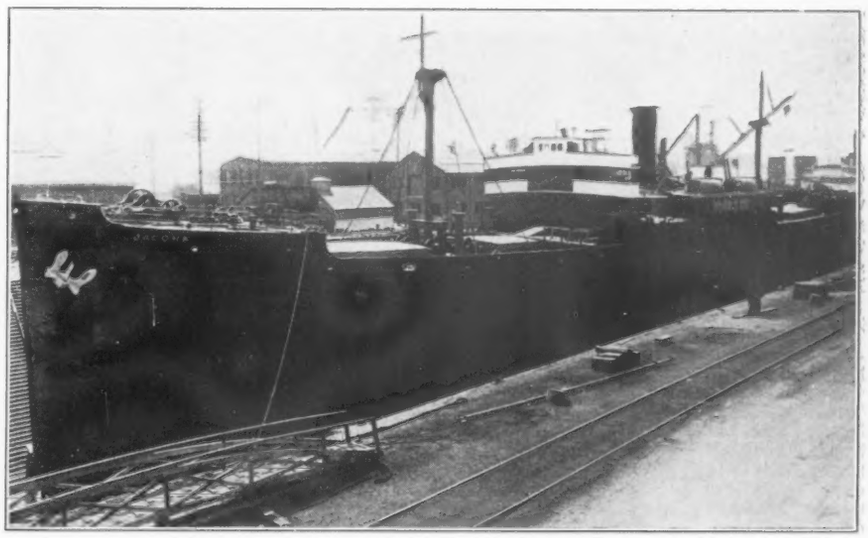
Low prices of coal and keen competition were assigned by the Continental Coal Co. for a wage reduction, effective July 1, at its Brook mine, employing 500, and its Sands mine, with 300. The principal reduction was from 34 to 30 cents a ton for machine cut coal. A strike ensued, and the Brook mine, largest in Monongalia county, suspended operations. Meanwhile, the unions are fighting it out between themselves.

Crane Gives Employes $4,000,000 in Stock

Featuring the seventy-fifth anniversary of Crane Co., Chicago, maker of plumbing and bathroom equipment, Richard T. Crane Jr., president, made a personal gift of $4,000,000 worth of stock to employes of ten years' standing. It is the third gift of stock he has made to employes since 1926, the total value being $10,000,000. The company has 30,000 employes. Each with ten years to his credit will receive ten shares, and one additional share for each year oven ten, under the terms of the gift announced last week. Current value of the stock is $43 a share.

Unemployment Shows Increase in Cleveland

General unemployment in Cleveland has increased during the past month and the total number now out of work is estimated by the public employment service as 40,000, mainly unskilled and semiskilled labor.



FLOATING POWER STATION SERVES NEW ENGLAND

When waterpower fails subsidiaries of the New England Public Service Co. located near the coast, the floating central station JACONA will come to the rescue. At the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., this 7000-ton warbuilt steamer is being equipped with two 10,000 kilowatt General Electric turbine generators and auxiliaries. The JACONA will obviate the necessity of constructing many steam standby stations.

June Daily Steel Ingot Rate Is Lowest Since December

STEEL ingot production slumped in June to the lowest daily rate of the year, or 137,610 gross tons. In fact, except for the extremely low rates plumbed last November and December, the June rate was the lowest since December, 1927.

The June daily rate compared with 149,066 tons for May and 196,146 tons last June, when an alltime record was established. June was the fourth consecutive month in 1930 to register a decline.

The June total of 3,440,239 gross tons, according to the American Iron and Steel institute compilation, brought the six-month total for 1930 to 22,429,848 tons. From the record 29,037,398 tons produced in the first half of 1929 this year's figure shows a loss of 18 per cent. It compares with 24,798,073 tons in the first half of 1928.

June steel-making operations were at 68.73 per cent of capacity, compared with 74.45 per cent in May and 100.02 per cent last June. The operating ratio for the first half of 1930 is 76.67 per cent, contrasted with 95.55 per cent a year ago.

Import Algerian Iron Ore

Philadelphia—The following imports were received at this port during the week ending July 5: 1500 tons of ferromanganese ore, British India; 6890 tons of iron ore, Algeria, and 10 tons rolled iron from Sweden.

Abrasives Are Simplified

Washington—Producers and users of abrasives have approved a simplified practice recommendation on allowable limits for the sizing of aluminum oxide and silicon carbide abrasives for polishing uses and grinding wheel manufacture, effective next Sept. 1.

The New York chapter of the American Society for Steel Treating recently elected the following officers for 1930-31: Chairman, E. F. Cone, associate editor, *Iron Age;* vice chairman, J. J. Crowe, Air Reduction Sales Co.; and secretary treasurer, T. N. Holden Jr., E. W. Bliss Co.

Steel Ingot Production—1929-30

94.27 Per Cent of Industry Reporting
Gross Tons

1929	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,692,062	549,616	4,241,678	4,500,209	27	166,674	84.99
Feb.	3,590,826	489,279	4,080,105	4,328,789	24	180,366	91.97
Mar.	4,180,408	596,691	4,777,099	5,068,265	26	194,933	99.40
Apr.	4,025,409	640,351	4,665,760	4,950,139	26	190,390	97.08
May	4,275,161	707,484	4,982,645	5,286,339	27	195,790	99.84
June	3,999,363	622,585	4,621,948	4,903,657	25	196,146	100.02
Total 6 mos.	23,763,229	3,606,006	27,369,235	29,037,398	155	1,124,299	95.55
July	3,922,053	649,950	4,572,003	4,850,668	26	186,564	95.13
Aug.	3,987,400	668,023	4,655,423	4,939,172	27	182,932	93.28
Sept.	3,624,954	642,886	4,267,840	4,527,966	25	181,119	92.35
Oct.	3,631,674	642,235	4,273,909	4,534,405	27	167,941	85.64
Nov.	2,796,214	522,672	3,318,886	3,521,173	26	135,430	69.06
Dec.	2,375,797	360,489	2,736,286	2,903,063	25	116,123	59.21
Total	44,101,321	7,092,261	51,193,582	54,313,845	311	174,643	89.05
1930							
Jan.	3,137,002	441,572	3,578,574	3,796,090	27	140,596	70.22
Feb.	3,336,021	508,618	3,844,639	4,078,327	24	169,930	84.88
Mar.	3,513,904	539,616	4,053,520	4,299,905	26	165,381	82.60
Apr.	3,406,610	509,234	3,915,844	4,153,860	26	159,764	79.80
May	3,265,190	528,968	3,794,158	4,024,778	27	149,066	74.45
June	2,835,527	407,586	3,243,113	3,440,239	25	137,610	68.73
Total 6 mos.	19,494,254	2,935,594	22,429,848	23,793,119	155	153,505	76.67

Figures exclude crucible and electric ingots. Operating percentages for 1929 are based on capacity of 60,990,810 gross tons as of Dec. 31, 1928; for 1930 on capacity of 62,265,670 tons as of Dec. 31, 1929.

Locomotive Shipments Rise

June shipments of railroad locomotives rose to 80 units, a 43 per cent increase over May. Unfilled orders, however, registered the lowest of 1930. Five-months of 1930 show shipments 45 per cent greater than the same period of 1929 in the following:

	Shipments		Unfilled Orders	
1929	Domestic	Foreign	Domestic	Foreign
June	59	19	510	42
(6 mos.)	280	39	.....	.....
July	42	27	508	31
Aug.	123	6	405	31
Sept.	67	8	402	27
Oct.	96	.....	396	27
Nov.	75	20	389	9
Dec.	63	4	483	7
(year)	746	104	.....	.....
1930				
Jan.	48	.....	577	10
Feb.	64	3	525	8
March	66	2	529	6
April	94	3	461	3
May	56	2	410	9
June	80	1	335	8
(6 mos.)	408	11	.....	.....

Pails, Tubs at Year's Low

Galvanized sheet metal ware output in May fell to 131,015 dozen, the lowest since December of 1929. May's total was 13 per cent under April. Shipments also declined according to the department of commerce:

(In dozens)

1929	Pails and Tubs Production	Pails and Tubs Shipments	Other Ware Production
May	176,622	150,501	43,370
(5 mos.)	855,154	870,297	250,323
June	98,857	104,762	37,479
July	105,454	109,841	42,384
Aug.	107,004	108,461	53,250
Sept.	113,698	120,297	46,594
Oct.	129,282	135,197	45,117
Nov.	102,400	90,684	32,951
Dec.	112,962	107,733	33,114
Total year	1,624,811	1,647,272	541,212
1930			
Jan.	145,588	154,731	33,982
Feb.	119,739	129,853	35,121
March	135,178	135,602	37,963
April	131,015	120,552	44,058
May	113,645	107,496	43,195
(5 mos.)	645,165	648,234	194,283

Coal Output Increases

For week ended June 28, 8,005,000 net tons of bituminous coal was produced, comparing with revised output of 7,988,000 tons the week previous, according to the bu-

reau of mines. Six month totals show 1930 at 229,059,000 tons lagging by 25,626,000 tons from same time last year.

Enameled Shipments Slump

Enameled sheet metal ware shipments were down in May to 290,617 dozen, declining 9 per cent from April. Five-months totals for 1930 lag appreciably behind 1929 according to the department of commerce:

In Dozens

1929	Total	White	Grey and Colored
May	352,885	156,195	196,690
(5 mos.)	2,084,335	912,535	1,171,800
June	337,375	147,285	190,090
July	290,532	127,058	163,474
August	385,162	153,969	231,191
Sept.	338,169	143,505	194,664
October	371,292	158,138	213,154
Nov.	305,714	115,117	190,597
Dec.	391,523	103,404	288,119
Total (year)	4,504,102	1,861,011	2,653,091
1930			
Jan.	332,146	110,758	221,388
Feb.	331,915	120,523	211,392
March	341,372	124,856	216,516
April	318,431	124,562	193,869
May	290,617	114,709	175,908
(5 mos.)	1,614,481	595,408	1,019,073

«Doctoring» Scrap Cars Is Under Ban at St. Louis

A special committee on gradings and complaints has been appointed by William Rosenthal, president of the St. Louis chapter of the Institute of Scrap Iron and Steel, to investigate complaints concerning shipments of scrap and eliminating causes of these complaints. The committee consists of D. H. Cohen, chairman, Jack R. Forcheimer, Fred S. Fuld and William Rosenthal, all of St. Louis.

The committee was appointed as a result of a request by a St. Louis consumer for co-operation by the Institute. The letter mailed to consumers informing them of the appointment of the committee, contains the following statement:

"The national institute will back up this committee should it be unable to correct any particular situation. It should be understood that in cases of repeated violations of the code of business practices which specifically condemns 'top dressing' or 'doctoring' of cars, that the trade relations bureau of the Institute will receive the evidence from the local committee and will take adequate steps to avoid recurrence and to protect the interests of dealers who are trying to conform to standards and specifications."

First Half Pig Iron Output Almost Equal to 1928

COMPLETE statistics on pig iron production for June confirm the month as having the lowest daily rate since January and place the net loss in active stacks during the month at 19, instead of 20.

June's daily rate is now given as 97,760 gross tons, which compares with 104,564 tons for May and 123,887 tons for June, 1929. The daily average for the first half of 1930 thus is 101,121 tons, which compares with an average of 115,808 tons for all 1929.

The June total of 2,932,806 gross tons of pig iron ran the first-half output up to 18,302,912 tons, against 21,637,537 tons in 1929—the alltime record—and barely under the 18,510,463 tons of the first half of 1928.

Relating production to capacity, June was a 69.3 per cent month, compared with 74.2 for May and 88.5 for June a year ago.

As of June 30 the number of stacks active was 161, compared with 180 as of May 31. The twentieth stack mentioned last week as going out of blast did not become inactive until July 1, and therefore accrues to the July total. Last month a Riverside stack of the Wheeling Steel Corp. and the McKeefrey Iron Co. stack at Leetonia, O., were taken off the potential list, leaving 312 blast furnaces in the United States.

Of the 19 stacks dropped last month, 15 were steel and 4 were merchant. Not one stack was lighted. The merchant stacks taken out were Davison Coke & Iron Co. at Cherry Valley, O., Perry Iron Co. at Erie, Pa., Tennessee Products Co. at Rockdale, Tenn., and Youngstown Sheet & Tube Co. at South Chicago, Ill.

The steelworks stacks taken out of production last month included 3 by the Bethlehem Steel Co., 4 by the Illinois Steel Co., 3 by the Tennessee Coal, Iron & Railroad Co., 2 by the Republic Steel Corp. and 1 each by the Jones & Laughlin Steel Corp., Youngstown Sheet & Tube Co., and Carnegie Steel Co.

AVERAGE DAILY PRODUCTION

	1930	1929	1928	1927
Jan.	91,573	110,742	92,113	100,043
Feb.	101,640	114,942	99,954	105,021
Mar.	104,930	119,662	103,199	112,326
Apr.	106,371	122,106	106,066	114,146
May	104,564	125,753	106,219	109,388
June	97,760	123,887	102,745	102,991
July	.....	122,016	99,120	95,311
Aug.	.....	120,845	101,193	95,183
Sept.	.....	116,548	102,120	92,750
Oct.	.....	115,747	108,824	90,710
Nov.	.....	106,081	110,155	88,728
Dec.	.....	91,513	108,702	87,039
Ave.	101,121	115,808	103,365	99,422

MONTHLY PRODUCTION

	1930	1929	1928
Jan.	2,838,751	3,433,028	2,855,515
Feb.	2,845,937	3,218,376	2,898,668
Mar.	3,252,822	3,709,518	3,199,175
April	3,191,119	3,663,167	3,181,975
May	3,241,477	3,898,344	3,292,790
June	2,932,806	3,715,104	3,082,340
Total 6 mos	18,302,912	21,637,537	18,510,463
July	.....	3,782,511	3,072,711
Aug.	.....	3,746,198	3,136,995
Sept.	.....	3,496,454	3,063,593
Oct.	.....	3,588,146	3,373,539
Nov.	.....	3,182,420	3,304,656
Dec.	.....	2,836,917	3,369,784
Total	.....	42,270,183	37,831,741

RATE OF OPERATION

(Relation of Production to Capacity)

	1930†	1929*	1928‡
January	65.0	79.0	66.8
February	72.1	82.2	72.5
March	74.5	85.5	74.8
April	75.4	87.4	76.8
May	74.2	89.8	77.0
June	69.3	88.5	74.4
July	.....	87.2	71.8
August	.....	86.4	73.3
September	.....	83.3	74.1
October	.....	82.6	78.9
November	.....	75.8	79.8
December	.....	65.5	78.8

†Based on capacity of 51,490,790 tons Dec. 31, 1929; *on capacity of 51,069,895 tons; ‡on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

JUNE PIG IRON PRODUCTION

	No. in blast last day of month		Total tonnage made	
	June	May	Merchant	Nonmerchant
Ohio	36	40	104,491	554,615
Pennsylvania	53	58	83,347	808,330
Alabama	14	17	120,129	99,612
New York	13	13	106,210	97,942
Illinois	15	18	117,843	212,461
Colorado	2	2		
Indiana	11	14		
Maryland	4	4	8,279	392,150
Virginia	1	1		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	1	1		
Tennessee	0	1	11,290	95,667
Utah	1	1		
West Virginia	3	3		
Michigan	4	4		
Minnesota	2	2		
Missouri	0	0	36,105	52,056
New Jersey	0	0		
Spiegel and ferro—all states			7,736	24,543
Total	161	180	595,430	2,337,376

Industrial Men in the Day's News

A. T. DeForest, President, Columbia Steel Corp., San Francisco

Photo by Blank-Stoller Inc.

A BUSINESS career divided geographically gives him 20 years in Cleveland and 27 years on Pacific coast.

EMPLOYED by H. P. Nail Co., Cleveland, in 1883, he went with American Steel & Wire Co., which purchased it, and has been with the Steel corporation ever since.

IN 1903 he chose San Francisco as his future home, and eight years later was elected vice president of United States Steel Products Co.

LIKE many others who have become leaders in business activity on the Pacific coast A. T. DeForest, president of Columbia Steel Co., San Francisco, is not a native son of California. But 27 years residence and contact with affairs of that region have served to acclimate him fully. For 20 years of his business life he was employed in Cleveland, then going west and remaining. As noted in IRON TRADE REVIEW of June 26, he heads the new subsidiary of the United States Steel Corp. which was incorporated in Delaware to take over the operation of mines, furnaces, foundries and mills formerly owned by Columbia Steel Corp., operating in Utah and California, which was acquired by United States Steel Products Co. by purchase last January.

Mr. De Forest was born in Cleveland, where he attended public schools. In January, 1883, he was employed by the H. P. Nail Co., Cleveland, which marked his entry into the steel business. When the company was sold to American Steel & Wire Co. of Illinois, he was secretary and sales manager. American Steel & Wire Co. of New Jersey appointed him assistant manager, and later manager of the Cleveland district, where he remained until October, 1903. That date saw the start of his Pacific coast experience. He then was appointed Pacific coast sales agent for American Steel & Wire Co. with headquarters in San Francisco.

In 1911 when the Pacific coast department of the United States Steel Products Co. was formed to sell in Pacific coast territory and the Hawaiian Islands all products of United States Steel Corp.'s manufacturing subsidiaries, Mr. DeForest was elected vice president. He maintains memberships in leading Pacific coast clubs, including the Bohemian, Ranier, Jonathan and Olympic organizations.

The new company, Columbia Steel Co., in addition to operating Columbia Steel Corp.'s properties, will continue to represent in Pacific coast territory and the Hawaiian Islands, the United States Steel Corp. subsidiaries and further will represent United States Steel Products Co. in its solicitation of foreign business. Other Columbia Steel Co. officials are: L. F. Rains, vice president, formerly general manager of Columbia Steel Corp.; W. A. Ross, vice president and treasurer, formerly discharging similar duties for United States Steel Products Co., and for many years first assistant to Mr. DeForest; and H. F. Wilson, secretary-auditor, for a number of years with United States Steel Products Co., latterly as secretary-auditor.

JOHN U. Sebenius, 68, retired July 1 as general mining engineer, Oliver Iron Mining Co., Duluth, subsidiary of United States Steel Corp. He became mining engineer for New Jersey state geological survey in 1887. After some geological work in northern Michigan he returned to the East in 1890 to become assistant superintendent at the magnetite mines, Witherbee, Sherman & Co., Port Henry, N. Y. He located in Duluth in 1892 to begin a systematic geological survey of the Mesabi iron range. In 1894 he became consulting engineer for Rouchleau-Ray Mining Co., Duluth, remaining until 1898. When its properties were sold to Lake Superior Consolidated Iron Mines of the Rockefeller interests in 1898 his services were retained and he also was retained by Duluth, Missabe & Northern and Duluth & Iron Range railroads in connection with important litigation. He later was permanently engaged as mining engineer for the Lake Superior Consolidated and when it was taken into the United States Steel Corp., Mr. Sebenius was appointed superintendent of explorations and mining

engineer for Oliver Iron Mining Co.

Horace Johnson, president of Duluth & Iron Range railroad, Duluth, was retired on pension July 1, and W. A. Clark, vice president, has been named acting president.

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Ernest E. Thum, for three years associate editor of *The Iron Age*, New York, has resigned to become editorial director of *Metal Progress*, to make its initial appearance Sept. 1, published by American Society for Steel Treating, Cleveland. After graduating as a metallurgical engineer from Colorado school of mines, Mr. Thum became field engineer for Anaconda Copper Mining Co., and later was chief civil engineer for International Smelting Co. He then was successively professor of met-

Ernest E. Thum

allurgy, University of Cincinnati; metallurgical editor, Chemical and Metallurgical Engineering; technical publicity director, Union Carbide & Carbon Corp., and three years ago he became associate editor of *The Iron Age*.

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Edward L. Anderson, formerly assistant superintendent of the Attica, N. Y., plant of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed superintendent to succeed John T. Arnold, who retired July 1 after completing 42 years of service, the last 25 of which as superintendent at Attica.

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R. J. Welsh, 503 Healy avenue, Atlanta, Ga., has been appointed representative in that territory of Chicago Pump Co., Chicago.

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John T. Broderick, secretary of General Electric Co.'s manufacturing committee, Schenectady, N. Y., retired July 1, concluding 41 years of continuous service. He became affiliated with Thomson-Houston Co., Lynn, Mass., in 1889, on the factory staff of E. W. Rice Jr., then superintendent and later president of General Electric Co. After several years as personal assistant to Mr. Rice, during which interval General Electric was formed in 1892, Mr. Broderick was elected secretary of the manufacturing committee shortly after its formation in 1893, continuing in that capacity for an unbroken period of 36 years.

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Clifford D. Voris has retired as general manager and secretary of Mid-States Steel & Wire Co., Crawfordsville, Ind. He became connected with the Indiana Wire Fence Co., now out of business, in 1888, and later was associated with Capt. W. P. Herron in the organization of the Crawfordsville Wire Co., which later burned down.

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George Monk, formerly with Stamped & Enameled Ware Co., Hespeler, Ont., now is affiliated with the service staff, Ferro Enamel Supply Co., Cleveland.

Clarence Fynaut, recently in charge of porcelain enameling for Buckwalter Stove Co., Royersford, Pa., has returned to the Ferro company's enamel service staff.

Allen Apple, formerly with Frigidaire Corp., now is connected with the Ferro company's engineering staff.

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J. D. Stitt of Redpath, Brown Co., British structural steel fabricator, and his son, D. J. Stitt, were guests at an informal luncheon at the Engineers' club, New York, July 2, given by C. F. Abbott, American Institute of Steel Construction Inc., and other officials of the latter organization. Mr. Stitt, representing the British Steel Works' association, is touring the United States visiting structural mills and fabricating shops, studying American methods.

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H. H. Pleasance, formerly general sales manager, steel bar division, Bourne-Fuller Co., Cleveland, has been appointed Indianapolis district sales manager for Republic Steel Corp., Youngstown, O., now the parent company.

R. W. Helms has been appointed to succeed J. S. Sprott, recently resigned as general sales manager, Berger Mfg. Co., Canton, O., division of Republic Steel Corp. L. A. Burkholder is sales manager of equipment products, and M. C. Brown sales manager of building products.

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Don F. Kennedy, recently manufacturers' representative at Detroit and formerly head of Sterling Mfg. Co., Detroit, tools and dies, has been appointed western sales manager, Hammond & Irving Inc., Auburn, N. Y., manufacturer of tool and alloy steel. His headquarters will be 821 Hazelwood avenue, Detroit. When Charles M. Hammond, president of Hammond & Irving Inc., was president of Hammond Steel Co., Syracuse, N. Y., Mr. Kennedy was his western manager. Mr. Kennedy once was president of Detroit Tool Manufacturers' association.

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C. H. Johnston has been appointed Tulsa, Okla., representative for Babcock & Wilcox Co., New York, to succeed Paul Edkin, resigned.

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William Stringham, since Feb. 1, 1923, assistant general superintendent,

William Stringham

East works, American Rolling Mill Co., Middletown, O., has been made assistant vice president. Mr. Stringham became affiliated with the company in 1901 as a roller in Central works, Middletown. He was made assistant superintendent of sheet and jobbing mill, Jan. 1, 1912, and June 1, 1922, was made superintendent of sheet and jobbing mill departments. At present he is in charge of all rolling and finishing operations at East works.

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Herman Ely, formerly vice president and director of Timken Roller Bearing Co., Canton, O., and J. F. Strough, formerly secretary and treasurer, have been elected directors of Detachable Bit Corp. of America, New York.

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Scott Turner, director, United States bureau of mines, Washington, has been appointed by the directorate of American Institute of Mining and Metallur-

(*Concluded on Page* 34)

Obituaries

GEORGE G. STUART, 65, district sales manager at Cleveland for Youngstown Sheet & Tube Co., Youngstown, O., since 1920, died July 7 at St. Luke's hospital, Cleveland, from peritonitis. Mr. Stuart was one of the widest known old-time wire products salesman of the United States. He was born at Pittsburgh, June 11, 1865, where he obtained his early education and where he was employed by Pittsburgh Steel Co. He later became salesman for Braddock Wire Co., Braddock, Pa., and then became affiliated with C. M. Biddle Co., New York, broker. Jan. 1, 1909, he became affiliated with Youngstown Sheet & Tube Co., and for several years was located at Buffalo, traveling in New York state sales territory. About 1920 he was transferred to Cleveland, where he since had remained as district sales manager. In addition to his reputation as a wire salesman, Mr. Stuart was signally successful as a seller of wrought pipe through Canada for shipment to the oil fields of Colombia, South America.

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J. H. Kurth, 70, president, Lufkin Foundry & Machine Co., Lufkin Tex., died recently after an extended illness.

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Adolph A. Claus, president, Erie Mfg. Co., and treasurer of Heisler Mfg. Works, Erie, Pa., died last week at Erie, following a short illness.

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Alexander Meldrum, 46, inventor and vice president, Meldrum-Gabrielson Corp., Syracuse, N. Y., manufacturer of milling and boring machines, special machinery, etc., died recently at Syracuse.

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J. M. Cullen, 74, operating vice president, Reading Iron Co., Reading, Pa., died there July 4, after an attack of appendicitis. He had been with the company 50 years, serving under three presidents. He started as a clerk.

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Cyrus Robinson, 60, retired mining engineer, Mount Vernon, N. Y., died at West Harwich, Mass., June 30. At various times he was connected with General Electric Co., Jeffrey Mfg. Co., Westinghouse Machine Co., M. Guggenheim's Sons and American Smelting & Refining Co.

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Waldo Calvin Bryant, 67, chairman of Bryant Electric Co., Bridgeport, Conn., died July 5 at Colorado Springs, Colo., where he had gone two weeks previously in an effort to regain his health. Born at Winchendon, Mass., he established the Bryant Electric Co. in 1889, selling his interest to Westinghouse Electric & Mfg. Co. in 1921. He remained as president and general manager until 1927, then becoming chairman of board.

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James W. Roulston, vice president of Stedfast & Roulston, Boston, machinery merchants, died July 2 at South Boston, where he was born and educated. More than 40 years ago he entered the employ of Hill, Clark & Co., where he rose to be vice president, continuing in that capacity when the

Photo by Blank-Stoller Inc.

George G. Stuart

name style of the company was changed to Stedfast & Roulston.

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William Newton Ryerson, 54, president, Trojan Engineering Co., 27 William street, New York, died July 7. He was a graduate of Columbia university and a member of the American Institute of Electrical Engineers and American Society of Mechanical Engineers.

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Clarence W. Dickerson, 70, vice president and secretary, Timken Detroit Axle Co., Detroit, died July 1. Mr. Dickerson located in Detroit in 1910 as assistant treasurer of the company. He formerly had served in an executive capacity with eastern bicycle companies.

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William E. Fulton, 77, retired president of the Farrell Foundry & Machine Co., Waterbury, Conn., died July 2 following a short illness. Mr. Fulton was born in Brooklyn, N. Y., and was identified for many years with the civic and industrial development of Waterbury.

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Col. William M. MacCleary, 49, steel broker, 2 Rector street, New York, died at Mt. Vernon, N. Y., July 2. Colonel MacCleary formerly was with Wheeling Corrugating Co. and Wheeling Steel Corp., Wheeling, W. Va. During the world war he served the government as a dollar-a-year man, in charge of allocation of structural steel for bridges.

Personals

(*Concluded from Page* 33)

gical Engineers to represent that organization at the annual meeting, July 9 to 12, at Birmingham, England, of the Institution of Mining Engineers. He sailed June 27.

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Harold S. Falk, vice president and works manager, Falk Corp., Milwaukee, has been elected a member of the Milwaukee vocational school board. He fills the vacancy caused by the death of Christian Scholtka, superintendent of Nordberg Mfg. Co.

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Charles D. Robb, for 26 years partner in C. W. Leavitt & Co., 30 Church street, New York, now is associated with C. Tennant Sons & Co., 19 West Forty-fourth street, New York, importers and exporters of ores, metals, alloys, etc.

Link 300 Trade Bodies With Arbitration

More than 300 trade associations have become affiliated with the American Arbitration association, New York, according to its third annual report just issued. They include National Machine Tool Builders association, Southern Supply and Machinery Dealers association, Institute of Scrap Iron and Steel, Steel Founders Society of America, and National Coal association. More than 290 law firms have used the services of the arbitration tribunals. Emphasis is placed on the necessity for careful preparation of arbitration agreements, attention being called to the number of appeals to courts to vacate awards because technical requirements were not observed. More than 60,000 copies of warnings, with instructions for correct procedure, have been distributed.

Here and There in Industry

NORTH AMERICAN REFRACTORIES CO., Cleveland, has bought the United States Refractories Corp., Mount Union, Pa., and the Savage Mountain Fire Brick Co., Frostburg, Md. J. D. Ramsay is president of the purchasing company. The organization of the acquired concerns, headed by Thomas N. Kurtz, president, will be absorbed. The North American company has plants at Ashland, Ky., Curwensville, Pa., Strasburg, O., St. Marys, Pa., Lock Haven, Pa. and Farber, Mo.

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Bucyrus-Erie Co., Milwaukee, has received a contract for 12 dragline excavators and a like number of high lift shovels from the Anglo-Chilean Consolidated Nitrate Corp.

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Michigan Valve & Foundry Co., Detroit, has bought control of the Columbus Valve Co., 412 Spruce street, Columbus, O. Production is to be increased.

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Spicer Mfg. Corp., Toledo, O., has taken over the stocks, tools and patents of the Superior Universal Products Co., Bowling Green, O., but will not operate the plant.

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Monarch Derrick Co., Tulsa, Okla., manufacturer of oil field derricks, has moved its sales office from the Exchange Bank building to 318 Central State Bank building. B. E. Sanders is in charge.

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Bethlehem Steel Co., Bethlehem, Pa., has placed an order with H. A. Brassert & Co., engineers, Chicago, for three 42-inch cold blast valves for its Cambria plant, Johnstown, Pa.

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Puhl & Hepper Mfg. Co., St. Louis, manufacturer of ventilating systems and sheet metal products, has leased a plant at 6400 Florissant avenue and will move shortly from its old location at 5775 Thekla avenue.

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U. S. Pressed Steel Co. is moving its plant from Ypsilanti, Mich., to the plant of the Harrow Spring Co. at Kalamazoo, which it recently bought and combined with its own business. The company's address will be 763 East Vine street, Kalamazoo.

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General Electric Co., Schenectady, N. Y., has divided its industrial heating and welding section in two sections. C. L. Ipsen is manager of sales of the industrial heating section and L. D. Meeker of the electric welding section.

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Friend Mfg. Co., of Gasport, N. Y., manufacturer of farm equipment, has been sold to a group headed by A. E. Waller of the Ansbacher-Seigel Co. The companies will be united under one general management although the separate plants will be continued.

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American Car & Foundry Co., New York, is undertaking fabrication of structural steel for bridges and buildings at its plant at Buffalo. This plant has done this type of work on a small scale for one railroad in the past. Other plants will not be affected by the change.

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United States Pipe & Foundry Co., Burlington, N. J., is completing a 3-story laboratory building in connection with its general offices at Burlington. It will be devoted to research in production of cast pipe, including foundry practice. Dr. F. C. Langenberg, director of research, will be in charge.

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Inca Mfg. Co., Fort Wayne, Ind., has completed its recent addition, equipment has been installed and production started. It adds 60,000 square feet of floor space. The company manufactures a line of wire products and is a division of the National Electric Products Corp., New York. G. W. Spindler is secretary and treasurer.

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Tennessee Stove Works, Chattanooga, Tenn., has completed a porcelain enameling plant, including an electric continuous porcelain enameling furnace, which was built by the Ferro Enamel Supply Co., Cleveland. L. H. Caldwell is president of the stove company, B. M. Rawlings secretary, and T. J. Moulton in charge of the enameling plant.

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Cutler-Hammer Inc., Milwaukee, has acquired all the common stock of Schweitzer & Conrad Inc., Chicago, manufacturers of high voltage equipment. The latter will continue to operate as an independent manufacturing and selling unit. Beverly L. Worden, president of Cutler-Hammer Inc., has been elected president of Schweitzer & Conrad. F. R. Bacon, chairman of the Cutler-Hammer board, and F. L. Pierce and Louis A. Lecher, other Cutler-Hammer board members, have been made directors of the Schweitzer & Conrad company. Messrs. Schweitzer and Conrad continue as consulting engineers for the company and members of the board of directors.

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Marshall Supply Co., Tulsa, Okla., jobber of mill, mining and oil field supplies, has added a power transmission department to its organization, in charge of A. D. Dunlap. Among lines represented are those of Brown Engineering Co., Reading, Pa., Palmer-Bee Co., Detroit, and Standard Pressed Steel Co., Jenkintown, Pa.

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Frey Steel Products Co., 620 Lewis Tower, Philadelphia, has been organized to manufacture light-weight structural sections. It has located its plant at Milton, Pa. E. C. Frey, formerly general manager and treasurer of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., heads the company. Pearce Fireproof Co., Philadelphia, is distributor. Millard D. Myers is in charge of operations.

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Republic Steel Corp., Youngstown, O., has opened a district sales office in the Circle Tower, Indianapolis. H. H. Pleasance, formerly general manager of sales of the steel bar department of the Bourne-Fuller Co., Cleveland, has been appointed district sales manager. The office will serve all of Indiana except the extreme northern portion, which is included in the Chicago district, and the extreme southern part, which is in the Cincinnati district.

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Wean Engineering Co., Warren, O., has acquired exclusive license to manufacture and sell the Mulholland oscillating polishing machine for polishing chrome nickel and other highly finished sheets. This machine was invented and developed by David E. Mulholland and Walter Mulholland, Norwich, N. Y., with technical assistance from Dr. F. C. Langenberg, Burlington, N. J. These three will act as technical advisers to the Wean company in respect to these machines.

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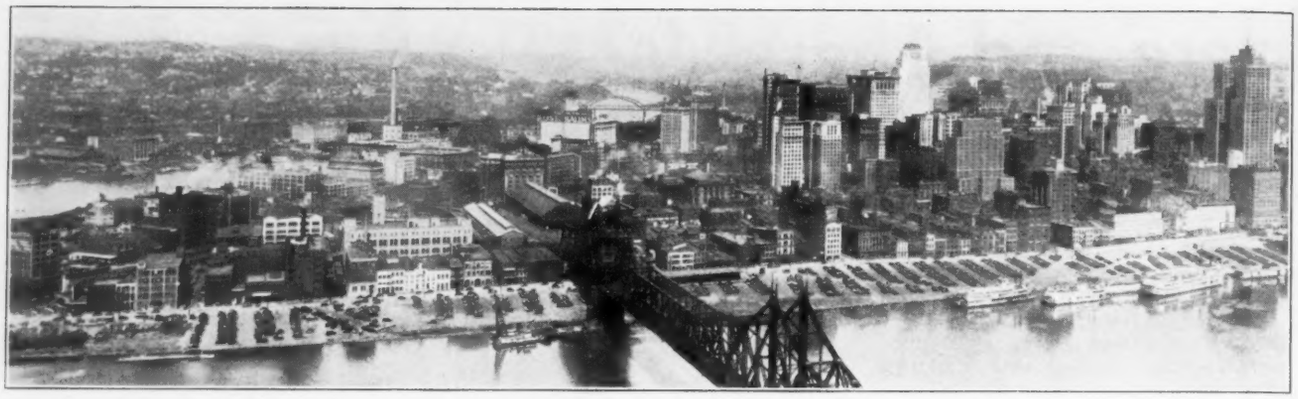
Ajax Pipe Line Co., subsidiary of Standard Oil Co. of New Jersey, which is building an oil pipeline from Glenn pool, Okla., to St. Louis, has let contract for engines and pumps for the nine pump stations. Engines of diesel type, 500 horsepower each were awarded McIntosh-Seymour Co., Auburn, N. Y., and Worthington Pump & Machinery Corp., New York. Pumps, reciprocating type, with daily capacity of 32,500 barrels each were awarded Prescott Pump Co., Menominee, Mich., and Worthington Pump & Machinery Corp., New York.



F. o. b. PITTSBURGH

PITTSBURGH

PIPE still occupies the center of the stage in the steel industry in the Pittsburgh district. Developments in producing facilities approach culmination while a realignment of distributors and one large producer also attends the sharp spurt in business that has been in progress for the past several months and that bids fair to continue for the larger portion of the last two quarters.

Pipe production in itself represents a relatively small percentage of the total production of finished steel products, in 1929 being less than 10 per cent of the aggregate, and because of the restricted demand in general steel activity tubular material probably has received a bit more attention during recent months than would have been true a year ago when practically all steel rolling departments were well engaged. Business this year in the larger sizes of seamless and lapwelded pipe, nevertheless, has been noteworthy.

Swelling Pipe Orders May Tide Output to 1931

Additional pipe bookings the past month give the situation a more favorable outlook than in May, when tonnage was rising on producers' books. Awards of the larger lines so far this year total 800,000 to 1,000,000 tons for all makers, of which about 70 per cent has been placed with Pittsburgh and Youngstown interests. Most of the proposed lines have been disposed of but announcement of the placing of a few active projects still is lacking.

Relatively small branch or feeder lines have helped to swell the tonnage involved in the longer ones, and solid engagement of mills producing pipe 6 inches in diameter and over now is in prospect until well toward the end of the year. Due to the fact that pipe laying is curtailed in some sections of the country during winter months and to the possibility that new producing facilities may delay deliveries, it appears likely that some prospective if not awarded tonnage may be carried over into next year.

National Tube Progressing on McKeesport Program

National Tube Co., which eliminated most of its lapweld furnaces at McKeesport to make way for the new seamless facilities, has been in production on the smaller sizes of seamless since May but will not have completed this extensive construction program on the large size equipment for a number of weeks. Youngstown Sheet & Tube Co. is progressing on its plant for the production of electrically welded pipe. Spang, Chalfant & Co. Inc. has plans in prospect for additional capacity but these are not expected to be realized this year. Although not related exclusively to pipe production, the new plant of the A. M. Byers Co. at Ambridge, Pa., which is nearing completion, has considerable interest centered upon it because of its use of the Aston process for production of wrought iron. Furnace equipment is ready and some experimental heats have been run but installation of rolling facilities still is in process. Formal opening of the plant is planned within the next 30 days.

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Some interesting developments are looked for as the result of the consolidation of Spang, Chalfant and the National Supply Co. This alignment will give National Supply its own source of tubular supplies for its 100 stores in various oil and gas fields, Spang, Chalfant producing the larger sizes of lapwelded pipe as well as seamless material. National Supply formerly purchased its pipe from the National Tube Co. and reports have been heard that the latter will take over the Oil Well Supply Co., a large distributor which for the past several years has been controlled by Spang, Chalfant. It has been denied that Oil Well Supply will be included in the National Supply-Spang tieup.

Oil Well Supply also was a National Tube customer prior to its acquisition by Spang, Chalfant and now remains as the largest possible outlet for the leading interest's output of tubular material for oil and gas well use. The Frick-Reid Supply Co. is a Jones & Laughlin Steel Corp. interest, and other similar companies, such as Continental Supply Co., Jarecki Mfg. Co. and Norvell-Wilde Supply Co., deal with independent pipe producers. Whether National Tube might not create its own distributing facilities also has been the subject for some speculation.

Freight Rate Cases Involve Pittsburgh's Prosperity?

Freight rates loom larger as a vital issue for Pittsburgh and her industries, and the future prosperity of the district is regarded as the prize for which an active fight is being waged in rate hearings. It has been inferred that railroads serving Pittsburgh have not been as solicitous over the industrial welfare of the district as is warranted in view of the advantage being gained by other steelmaking sections, particularly Chicago, by reason of more favorable freight rates.

As an example, it is pointed out

that the recent decline of 4 cents per 100 pounds in Pittsburgh's iron and steel rate to Baltimore under the interstate commerce commission ruling in Docket No. 17,000 was more than offset when the Illinois Central railroad equalized Chicago steel shippers with Pittsburgh by dropping its rate for a 910-mile haul to New Orleans to 27 cents per 100 pounds, the same as Pittsburgh's for a 310-mile haul to Baltimore. The rate gave Chicago shippers an advantage on shipments through the Panama canal to the Pacific coast.

Rise in Short Haul Rates Disturbs Pittsburgh

The sharp increase in short-haul rates in the Pittsburgh district also is a sore subject to local industry. Pittsburgh's switching zone comprises about 20 square miles where nominal rates prevail. Outside this area the new mileage scale is applied, usually with discomforting results since increases in rates varying up to 140 per cent over the old schedule are inflicted upon nearby shipments. This 20-mile switching zone compares with one in Chicago of 600 square miles, although there the new short-haul rates have been suspended. Pittsburgh's protest against these rates were scheduled for hearing here July 9 before the Pennsylvania public service commission.

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Another menace to Pittsburgh industry is the proposal of the interstate commerce commission to eliminate certain circuitous routes in this area, thereby eliminating important routes to the east. At present there are three routes in addition to the shortest one via the Pennsylvania railroad, which is 442 miles to New York. Abolition of these other routes would prove a serious handicap to shippers located along these lines.

The New York Central railroad route via Youngstown and Ashtabula, O., is 55 per cent circuitous and would be subject to a higher rate if the commission's order were made effective. Nearby steel manufacturers would find their eastern market restricted to a certain extent by virtue of the higher freight charges. Hearings on this subject have been postponed and discontinuance of the circuitous routes has been delayed until at least the end of the year.

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Coal producers also are having their struggle with the freight rate question, the current issue being a revival of the old lake cargo case as well as a protest against rates to eastern markets. Hearings recently were held at Washington seeking to show that the present 35-cent differential between rates from this district and from southern West Virginia and eastern Kentucky to Lake Erie is unfair and directly responsible for the substantial loss experienced in Lake coal business by local operators during recent years. Another hearing will be held in Chicago Oct. 6 when southern operators will present rebuttal evidence.

The protest before the interstate commerce commission regarding rates to the East will charge gross inequalities between freight charges from this district and southern mines. For example, the freight from here to Boston, a distance of 648 miles, is $4.47 a gross ton. Eastern Kentucky can ship 641 miles to Newport News for $2.72 and with a charge of $0.75 for water transportation to Boston better the western Pennsylvania price by $1 a ton despite the longer haul. The eastern coal rate case will come before the commission Sept. 8.

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Some escape from adverse freight rates lies in river transportation, while trucking is being experimented with on short hauls. Carnegie Steel Co. has been hauling plates from Homestead to McKeesport in 15-ton lots by truck. The rate between these points was increased from 73 cents per net ton to $1.30. Increased use of the Monongahela and Ohio rivers in this district partly reflects the rate situation, iron and steel traffic recently rising to the highest level on record for the period. Developments also continue in the providing of improved facilities for the handling of larger tonnages of all products over the rivers.

Innovations Designed in New River Transports

Modern towboat design is represented in the OHIO, a boat launched recently by the Dravo Contracting Co. for the Mississippi Valley Barge Line Co., St. Louis. Of all-steel construction, with a length of 200 feet, 40-feet beam and 10½-foot depth, this craft has a gross tonnage of 750 and is one of the largest and heaviest towboats to be built for river service. In constructing part of the bilge and bow of the boat steel plates ⅝-inch thick are employed, this representing a heavier section than ordinarily used for this type of work.

The OHIO is propelled by two 100-horsepower uniflow engines, and the water-tube boilers are fired with fuel oil. Twin screw propellers are employed instead of the usual stern wheel. A crew of 30 can be carried. This boat is one of a fleet of five beign built by Dravo and the Charles Ward Engineering Works, Charleston, W. Va., for the St. Louis company. One launched recently by Charles Ward is equipped with turbine electric drive, the first installation of its type on river craft. Fifty steel barges also are being built in this district to be used in connection with the towboats for shipments on the Ohio and Mississippi rivers between Cincinnati, St. Louis and New Orleans. The barges are small and are constructed with wedge-shape bows that fit in notches in the towboats.

Small Barges Used to Speed River Service

Transportation service planned to be rendered by the Standard Unit Navigation Co., operating unit of the Mississippi Valley Barge Line Co., will be more of the railroad or express type than heretofore available. Due to the size of the barges smaller individual loads can be carried, permitting barges to be dropped off at their various destinations without causing delays for unloading portions of the cargo. Smaller shippers can be served better and quicker delivery effected, it is believed. This step represents one of several being taken to make river transportation available to the small shippers as well as the large ones who in many cases operate their own fleets. Terminal construction is under way or planned for important river ports. Standard Unit now is completing an elaborate terminal at Cincinnati. Plans are progressing for a large municipal terminal and warehouse at Pittsburgh.

◆

This year has been a poor one so far for the beehive coke industry. Output recently declined to the lowest level on record and the outlook for any substantial improvement during the remaining six months is poor. This applies principally to furnace coke since producers of the better grades of foundry coke have suffered less from by-product coke competition than have the makers of furnace fuel. Only 2500 of the 22,755 ovens in the Connellsville and lower Connellsville districts recently have been operating and of the former number only 460 were steelworks ovens. All of the more than 10,000 ovens of the H. C. Frick Coke Co., United States Steel Corp. subsidiary, have been idle for a number of months.

Frick recently acquired the Washington Coal & Coke Co., Dawson, Pa., and has discontinued operation of any of the 800 ovens formerly owned by this company. The valuable coal properties of the Washington company are adjacent to Frick workings and the coal will be sent by barge to the Clairton by-product ovens.

EDITORIAL

Just How Good or Bad Is Business in Steel?

WITH the first half of 1930 in the background and with the hoped-for turning point in industrial activity still in the future, now is an opportune time to take stock of the business situation.

Business is admittedly below expectations. It is far worse than represented by proponents of the Pollyanna school of optimism and far better than pictured by the chronic pessimists. But just how good or how bad is it?

The answer lies in comparisons of factors in the 1930 situation with those of the past. In scanning recent industrial activity, fair minded executives will agree that 1922, 1924 and 1927 were disappointing in volume of business and that 1923, 1925, 1926, 1928 and 1929 were satisfactory. As a matter of fact 1923, 1928 and 1929 can be characterized as years of abnormally good business. Therefore, in these eight postwar years are three that rate as poor, two as good and three as excellent. The average of all eight should be accepted as a equitable normal for postwar business and should serve as an appropriate measuring stick in determining the rating of 1930.

Comparison of significant data for the present year with averages for the eight years follows:

	Yearly average 1922-1929	Annual rate for 1930, based on first half
Freight car awards	98,015	65,208
Automobile production, units	3,980,177	4,500,000
Steel ingots output, tons	44,189,869	48,298,000
Pig iron output, tons	36,226,955	36,618,556

Taking the four factors separately, freight car awards during the first half were at an annual rate above actual awards in 1926, 1927 and 1928, but below those of the other five years. Automobile production in 1930 was at an annual rate only exceeded by the record year of 1929. Steel ingot output was at a rate only surpassed by 1926, 1928 and 1929. Pig iron production was greater than in 1922 and 1924, but less than in each of the other six years.

An Off Year, but Not a Poor Year

More significant, however, is the fact that industrial activity as reflected by three of these four representative factors, during the first half of 1930 was at a higher yearly rate than the average maintained since the World war. If it were not for the high car awards in 1922, which were attributed to war influences, the car orders for 1930 would be above the average.

Viewed from this angle the first-half of the present year has been much better than it has been pictured by many observers. If last-half performance were to equal that of the first six months, 1930, while still an off-year, could not be termed a year of extremely poor business.

So much of the current opinion on the industrial situation is influenced by concern as to what the future may bring forth that it is well to consider prospects for the next few months. Industry is resigned to a dull July and August—apparently with good reason. But the history of past declines shows that production and prices rarely continue downward for more than 18 months. The average is around 14 months. The present slump started in May or June of 1929 and now is in its fourteenth or fifteenth month. According to past experience the turning point should be near at hand.

Exceptions Make Generalization Unsafe

Assurance of an upturn in business in the fall will be welcomed warmly by everyone, yet there are many manufacturers whose business has not been affected by the general slump. While the majority of industrial establishments have been operating at anywhere from 10 to 50 per cent below last year's rate, there are a fair number who have enjoyed an excellent volume of business. The most unusual case reported to our attention was that of a manufacturer, who receiving a large order for a staple hardware product and finding his plant already well stocked with orders, asked bids from competitors and distributed this big order to them—at a profit to himself.

This is only one indication of the spotty situation that exists in industry today. A plant may be shut down tight for weeks, and then receive orders sufficient for a year or more. A few pipe mills have undergone this experience. The point is that it is not safe to generalize on the present situation. To the majority of concerns 1930 is an off-year, to a fortunate few it is a remarkable year, and to the industry at large it is not an extremely poor year nor even a good year, but it is a year better than the postwar average.

How Industry Is Greeting STEEL

Excerpts from a few of the hundreds of telegrams and letters received after the July 3 issue of STEEL had been distributed to subscribers

Most Constructive Move

"I want to congratulate you upon the most constructive move that has ever been called to my attention in regard to a trade publication.

"You have taken a very important strategic advantage in the new name and the makeup of the publication is one of the most constructive that I have ever seen."

Congratulations from Canada

"Permit me to congratulate you on the new name of STEEL for the *Iron Trade Review*, and also to say that the brief development history of this basic commodity to modern industry and development is a very concise and wonderful story."

In Iron Once, Now in Steel

"It is gratifying to note that so enterprising and up-to-date publication as the *Iron Trade Review* has arrived at the conclusion that it should identify itself more prominently with the steel industry. Of course you know that we at one time were in the iron business ourselves, but for a great many years have made nothing but steel."

It Is All Excellent

"Permit me to congratulate you and the staff upon the new form of *Iron Trade Review* and its new name STEEL. I think it is all excellent."

I. T. R. Satisfactory; STEEL Better

"I have just finished reading the first issue of STEEL and would like to be among the many who will take the trouble to congratulate you on the splendid paper which you have gotten out. Although the *Iron Trade Review* in its form and presentation was highly satisfactory to the reader, it seems that you have been able to improve the periodical."

"I can appreciate the great thought and care which has been put into the new periodical and feel that the high standards which you have set in considering the interest and requirements of your readers, will enhance the affectiveness and recognition of your magazine."

"We Like the New Title"

"Just a word of congratulation on the change of *Iron Trade Review*. It looks much more interesting, is more readable and should attract many new readers. Of course we very much like the new title."

* * *

"We congratulate you upon the change in name and decided improvement in type, general make-up and appearance of the publication."

Doesn't Like to Wade Through Ads

"We are not favorably impressed with the change of arrangement of the reading matter, in mixing it with the advertisements. It appears to the writer that a trade paper should have the reading matter together, arranged the same from week to week, so that the reader can find whatever he wishes without reading through a lot of advertisements."

STEEL a Distinct Advance

"I have reviewed with unusual interest the first copy of your magazine STEEL. I think it is a distinct advance in many respects over the old *Iron Trade Review* and yet continues enough of the familiar characteristics of that magazine to retain in large measure the good will value which it had so well established."

* * *

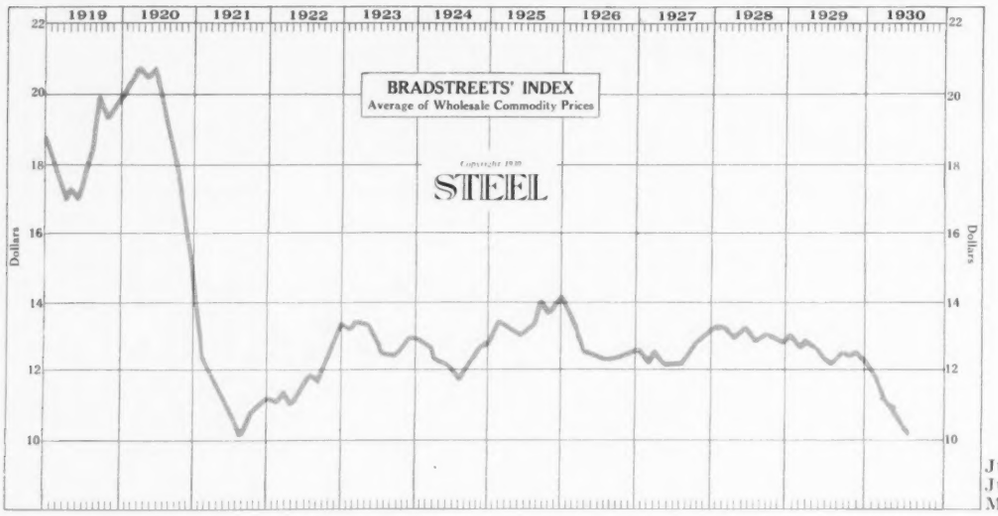
"It will not be easy to become accustomed to thinking of the *Iron Trade Review* as STEEL, but one must admire your courage, and I presume in time we will become accustomed to it.

"You are to be congratulated on the new make-up, both of editorial and advertising pages, as well as the changes in typography."

Progressive Step in Journalism

"Have just had the pleasure of reading your first issue of STEEL. I think this new publication is the most progressive step in modern business journalism and will undoubtedly bring great profits to you and your company. Congratulations!"

THE BUSINESS TREND



1929

July 1..... 12.49
June 1..... 12.46
May 1..... 12.68

1930

July 1.....$10.56
June 1..... 10.77
May 1..... 10.94

Commodity Price Drop Focuses Attention on Wages

COMMODITY prices still are tending downward. Bradstreet's index for July 1 stands at $10.56, and as hinted in this column last month, it now has passed below the figure of $10.62 for June 1, 1921, which is the lowest point since the World war. The "Annalist" index number of wholesale prices for the last week of June was the lowest since January, 1916. Agricultural products prices are extremely low.

The situation is viewed with concern by many authorities. However, retail prices, which thus far have not yielded ground as drastically as wholesale prices, are beginning to tend downward. If they decline to a point more in conformity with wholesale prices, the general business situation will be benefited.

In the meantime, numerous observers are calling attention to the fact wages are far out of line with commodity prices. Almost every financial or business situation letter or report issued within the past few weeks has contained some reference to the possibility of wage reductions if wholesale prices continue to drop.

Can Divergent Trend of Wages and Prices Continue?

One of the most recent reports on this subject is that of the National Industrial Conference Board Inc., in which a chart of wholesale prices and hourly wage rates is presented. This authority states: "While wages in the Civil war period and World war period followed prices in their advance, they did not fall below war levels, except for a brief period. The trends of wages and of prices since the World war have again been divergent and this suggests the interesting problem whether such a situation can long continue."

Thus far wages have not been reduced generally except in the copper, coal and textile industries. In the steel industry a few isolated cases of wage reduction have been reported but it is believed that in general steelmakers are in accord with James A. Farrell's declaration at the recent American Iron and Steel institute meeting that wages must not be reduced.

Weigh Effects on Production Costs and Buying Power

Those who think wages should be pared might well take note of the changes in America's economic structure since the last long downward swing of commodity prices. From the Civil war until 1895, when wholesale prices dropped from an index of about 190 to below 70, the purchases of wage earners were predominately agricultural products. Since the World war, wage earners have been heavy purchasers of manufactured articles such as automobiles, radios and household mechanical equipment. The new economic theory to fit this condition is that high wages mean abundant mass purchasing power and that a general cut in wages would seriously affect markets of mass production articles.

At the present time these markets are depressed. The annual earnings of workers is lowered by the curtailed rate of manufacturing operations, but the hourly rate, in general, remains high. The question is whether the advantages to production derived from general wage cuts would outweigh the depressing influence of the additional reduction of mass purchasing capacity that would ensue.

How Price Factor Qualifies Story Production Tells

AMERICAN business in general measures its degree of prosperity largely by volume of production. Undoubtedly one reason for this is the abundance of statistics showing the output of all important commodities. Production data are more complete than those of stocks, distribution, orders and other factors which contribute to the economic position of business. Also, the record of volume of goods produced is a fair indicator of industrial activity, and if it could be assumed that profits vary as production varies, then the output curve would be a satisfactory business barometer.

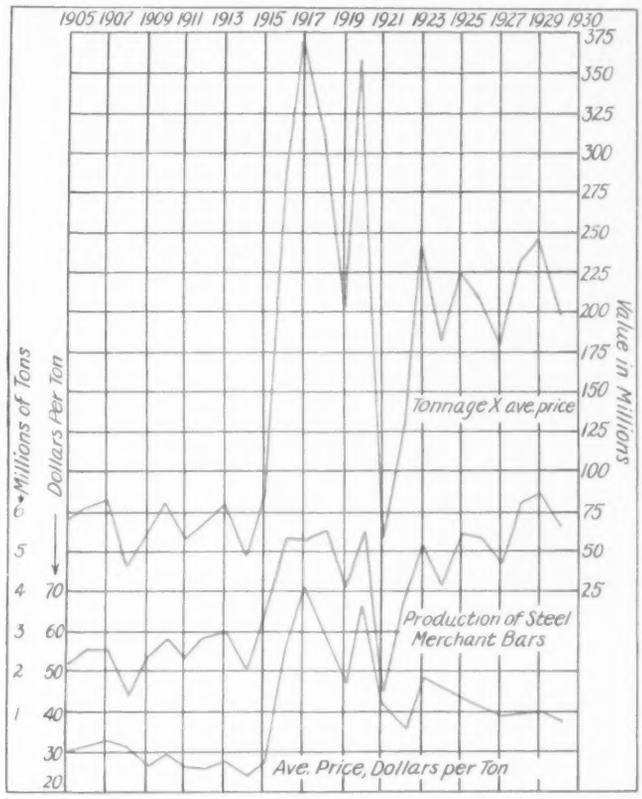
However this assumption is not always justifiable. For instance, a year of moderate production but of comparatively high prices may be much more profitable to industry than a year of high output but moderate prices. It would seem that a single index reflecting the influence of both volume of production and price of the commodity is a more reliable indicator than one based on output alone.

Volume of Output Times Price Should Be Good Barometer

In order to test this belief, STEEL has compiled data on steel merchant bars, a product which enjoys wide distribution throughout practically every consuming market for steel. The production from 1905 to 1929 inclusive is taken from the figures of the American Iron and Steel institute. The prices are approximate yearly averages compiled from the weekly market reports of STEEL. The annual value of output is determined by multiplying the annual production by the average price for the year. The result is the approximate income from the year's output. This annual income, it is believed, should be a better indicator of profit than is annual production.

A study of the accompanying table and chart reveals a striking similarity in the movement of prices, production and value. Rising prices and output tend to pyramid values, while falling prices and output combine to send values to disproportionate depths. In this respect the value curve supports the well known "feast or famine" characterization of the steel industry in past years.

Comparisons of the three factors in periods of moderate fluctuation are more illuminating. On the basis of production of merchant bars, 1925 with 5,368,827 tons was slightly better than 1923 with 5,148,066 tons. But on the basis of income 1925 with 220 million dollars ran second to 1923, when nearly 242 million dollars was received for the merchant bar output. Likewise 1924 was not as good a year as 1927 in production by 660,000 tons, but income was $2,172,000 greater than in 1927.


1905 1907 1909 1911 1913 1915 1917 1919 1921 1923 1925 1927 1929 1930
Millions of Tons
Dollars Per Ton
Value in Millions
Tonnage X ave. price
Production of Steel Merchant Bars
Ave. Price, Dollars per Ton

ANNUAL AVERAGE PRICE, PRODUCTION AND COMPUTED VALUE OF MERCHANT BARS, 1905 TO 1930.

1923 Better for Profits than 1929 When Output Was Record

The most striking comparison of this kind is found in the figures for 1923 and 1929. Production in the latter year was the highest for all time, being 22 per cent greater than in 1923. Income or value of product, however, was only half of one per cent higher—a negligible gain in view of the tonnage. In actual profits, 1923 should have been a better year than 1929 for the majority of producers of merchant bars.

If we exclude the years affected by wartime

influences and compare postwar data with those of prewar years, we find interesting contrasts. The averages for the ten years, 1905 to 1914 inclusive, and for the eight years, 1922 to 1929 inclusive, follow:

MERCHANT BARS

Year	Production Gross Tons	Average Price	Value Tons×Price
1905	2,271,162	$30.50	$69,270,441
1906	2,510,852	31.00	77,836,412
1907	2,530,632	32.00	80,980,224
1908	1,301,405	30.00	39,042,150
1909	2,311,301	26.00	60,093,826
1910	2,711,568	28.50	77,279,668
1911	2,211,737	25.00	55,293,425
1912	2,752,324	25.00	68,808,100
1913	2,930,977	27.00	79,136,379
1914	1,960,460	23.00	45,090,580
1915	3,474,135	26.00	90,327,510
1916	5,236,354	55.00	287,999,470
1917	5,226,031	70.00	365,822,170
1918	5,395,851	58.00	312,959,358
1919	3,945,075	48.00	189,363,600
1920	5,467,208	65.00	355,368,520
1921	1,367,430	40.00	54,697,200
1922	3,660,993	35.00	128,134,755
1923	5,148,066	47.00	241,959,102
1924	4,022,184	44.00	176,976,096
1925	5,368,827	41.00	220,121,907
1926	5,221,399	39.50	206,245,260
1927	4,682,252	37.37	174,804,024
1928	6,112,558	37.50	229,220,925
1929	6,316,456	38.50	243,183,566
1930	2,656,825*	36.16**	192,141,584†

*Estimated production for six months.
**Average price for six months.
†Annual value computed from estimated production and average price for first six months of 1930.

	Ten Prewar Years 1905-1914	Eight Postwar years 1922-1929
Output, tons	2,249,241	5,066,592
Price, per ton	$27.80	$39.98
Value	$65,283,120	$202,580,704

The ratio of prewar to postwar figures for output is 1 to 2.25; for average prices, 1 to 1.43 and for value, 1 to 3.1. From these figures it is apparent that the income from production since the war is higher proportionately above prewar income than are postwar output and prices above prewar figures. Stated in another way, the last eight years are better in comparison with prewar years than is indicated by the commonly used production charts.

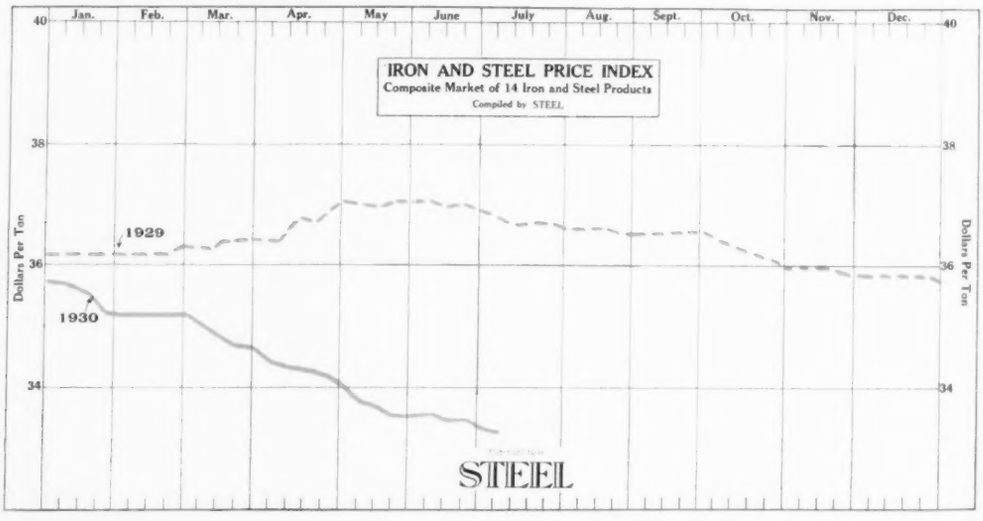
The figures for 1930 are based on an estimated production of 2,656,825 tons of merchant bars during the first six months. The actual average price was $36.16. Production at this price is at the annual rate of $192,141,584—above three but below five, of the postwar years.

The trends before and after the war are quite similar. In each case, prices declined gently, production rose gradually and the combination of the two gave value an almost level trend line. Looking to the future, we have a right to expect volume of production to swell slowly, as it always has done since 1875. Past history would make it seem evitable that prices will continue to drop off, but it is questionable whether the long decline following the Civil war will be repeated.

Year to year fluctuations will occur, as always, but if present tendencies are maintained, the long-time curve of production, rising slightly more than enough to offset price weakness, will result in a gradually increasing income.

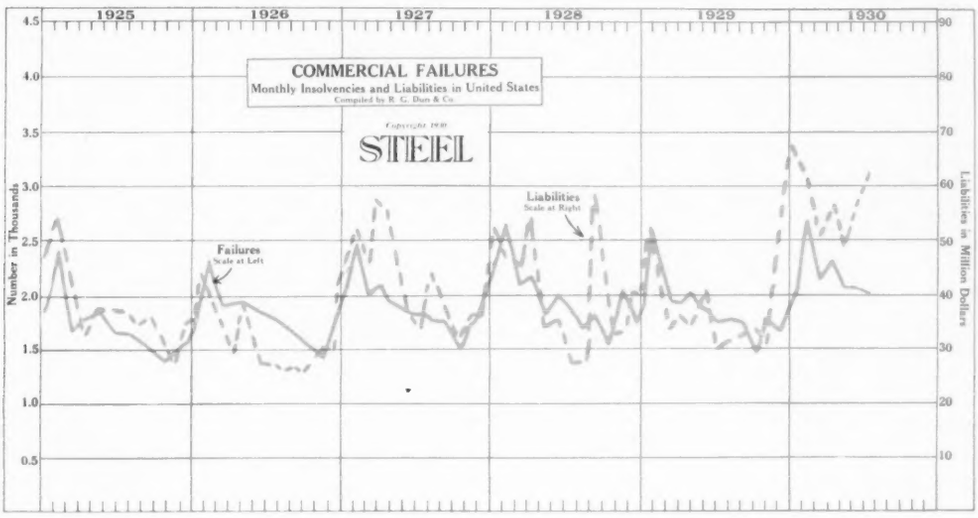
Steel's Weekly Composite of Prices Continues Downward Trend

Weakness of quotations for pig iron, steel bars and wire nails caused a further decline in STEEL'S composite of 14 steel and iron prices. The figure for July 2 was $33.34, a decline of 10 cents from the previous week and 19 cents from the average for the month of June. Fourteen months have passed since the steel industry witnessed a consistent rising trend in prices.



Monthly Averages

June, 1930	$33.53
May, 1930	33.73
April, 1930	34.44
June, 1929	36.99



1930	
Jan.	2,759
Feb.	2,262
March	2,347
April	2,198
May	2,179
June	2,026

1929	
Jan.	2,535
Feb.	1,965
March	1,987
April	2,021
May	1,897
June	1,767

Industry Is Trying To Get Down To Bed Rock

IF ADDITIONAL support were needed for the belief that July and August will be marked by unusually sluggish industrial activity, it is provided in the record of pig iron output in June. The decline in average daily production to less than 100,000 tons was not unexpected but the more significant fact that 20 blast furnaces were banked during the month points to further declines in July and probably in August.

Steelmaking activity has been curtailed, as have also the operations of rolling mills. The July 4 shutdowns in some establishments were extended into full week holidays, a factor that will give an artificial aspect to operating rates during the first half of July.

Automobile manufacturers are utilizing July as an opportune time for extensive shutdowns, and this coupled with absence of noteworthy demand from railroads, agricultural implement manufacturers and some other fields, makes the prospect for an early recovery in demand for steel rather hopeless. Of all the principal consuming groups, only structural steel fabrication gives promise of reasonable activity.

Squeezing Out Inflation Is Slow, Painful Process

This is not necessarily discouraging, except to those who live from week to week. The very fact the big consumers are out of the market means that inventories must be replenished before the fall recovery takes place. The drastic squeezing of inflation from the situation now augurs well for a more substantial upturn later on.

The dullness of industrial activity is accompanied by the expected weakness in prices, lowered railroad freight traffic, continued unemployment, easy money, and uncertainty in stock market activity.

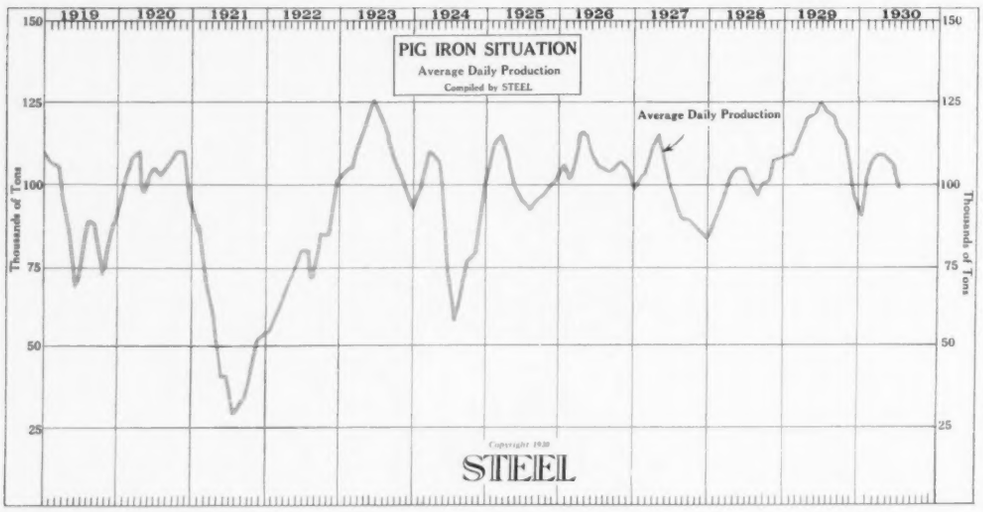
As discussed in more detail on page 39, commodity prices are exceptionally low, but there is a ray of hope in the signs of weakening retail prices. If retail quotations can be placed on a level more commensurate with wholesale prices, the business situation will be improved. STEEL'S composite of steel and iron quotations is lower. All along the line are indications that the downward swing of prices has not been halted.

Prices and Employment Still Are Disturbing Elements

Unemployment still is far from satisfactory. The census figures, based on selected returns from representative states, presented a prettier picture than was expected and were assailed as inaccurate by many critics. It is generally believed the curve of employment is tending downward, following the course of industrial activity.

According to R. G. Dun & Co. failures in June declined from 2179 in May to 2026, the lowest for any month this year. Although this is a decrease of 7 per cent from the 2179 failures in May it is an increase of 14.7 per cent above the 1767 failures of June, 1929.

Despite the drop in the number of failures in June, liabilities rose from $55,540,000 to $63,130,000, which is the highest figure for the year.



	1929	1930
Jan.	110,742	91,573
Feb.	114,942	101,640
March	119,662	104,930
April	122,106	106,371
May	125,753	104,564
June	123,887	97,972

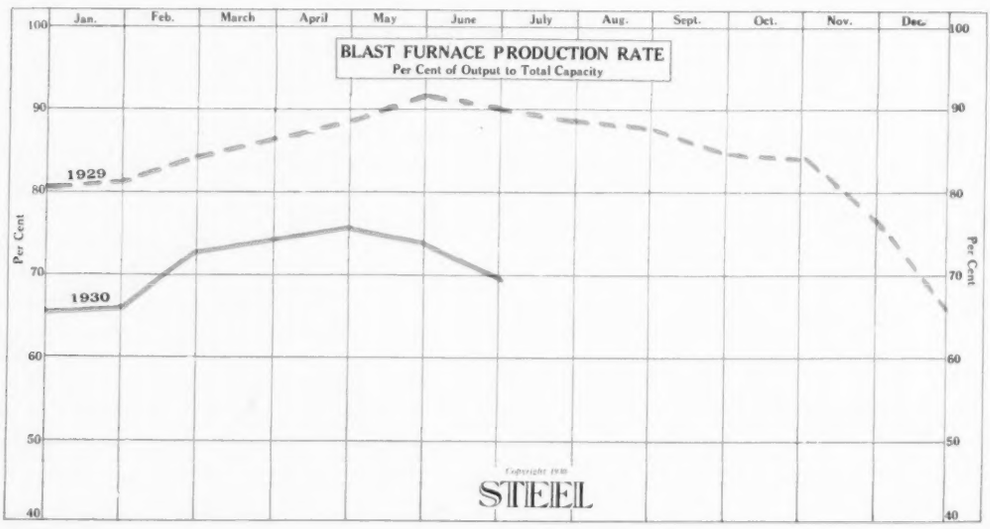
Average Daily Pig Iron Output Falls Below 100,000 Tons

Average daily production of pig iron in June continued the downward trend started in May. Production for June fell to 97,972 tons from a level of 104,564 tons in May. This drop in June represents a drop of 6.2 per cent from the previous month whereas reduction from April to May was only 1.7 per cent. To date the pig iron production curve has followed rather closely the production curve of 1928, although at present it is about 4.6 per cent below 1928 levels. The number of blast furnaces banked during June makes it practically certain that the daily production during July will be still lower than that of June.

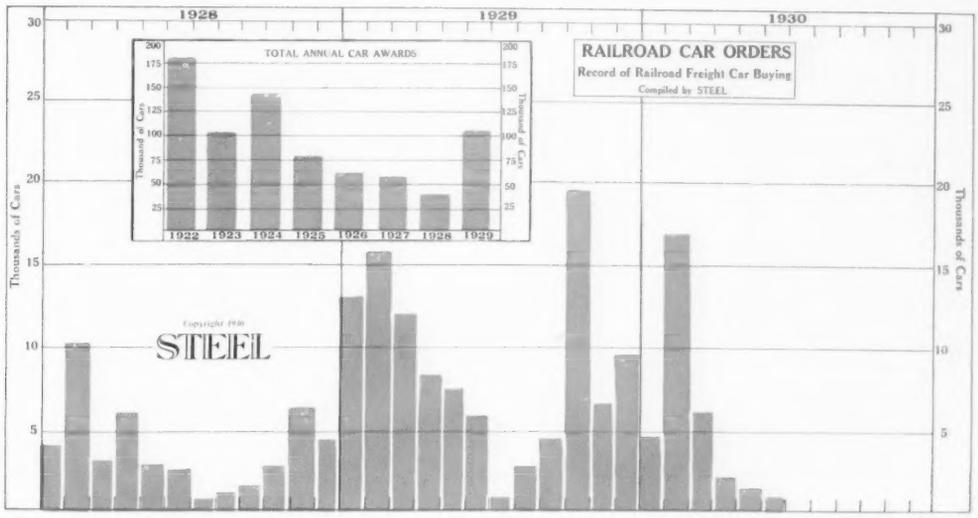
June Blast Furnace Operations At 69.5 Per Cent Capacity

Production rate of pig iron was sharply curtailed in June by the banking of 20 stacks. On May 31 active stacks numbered 180, and by June 30 this number had been reduced to 160. Although this was a sharp curtailment, it was not as precipitous as that of last December when the total of operating stacks was reduced from 176 to 156.

Production in per cent of total capacity was 69.5 in June as compared with 74.2 for May and 75.4 for April. Present operation is a reduction of 21.5 per cent from the 1929 level and 6.6 from 1928. Notwithstanding this, output for the first half was above the postwar average.



	Per Cent
June, 1930	69.5
May, 1930	74.2
April, 1930	75.4
June, 1929	88.5
May, 1929	74.4



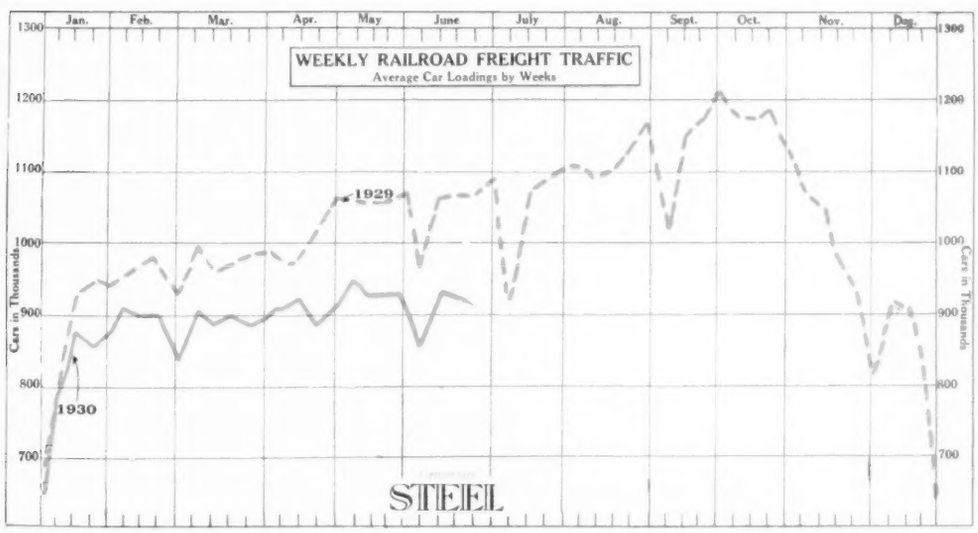
	1929	1930
Jan.	13,196	5,072
Feb.	15,994	17,027
March	12,033	6,118
April	8,205	1,997
May	7,562	1,392
June	5,886	998

Car Awards Low in June; First-Half Total Below 8-Year Average

Freight car purchases in June declined to an unusually low number. This month car orders amounted to only 998 compared with 1392 cars for May, 5886 cars for June one year ago, and 2422 cars for June two years ago. Car awards for the first six months totaled 32,604 cars in contrast with 62,816 cars in 1929 and 28,334 cars in 1928 for the corresponding period. Awards this month are the lowest since July, 1929. July, however, is usually the dullest month of the year. Car buying thus far in 1930 is considerably below the average for the eight postwar years, 1922-1929, inclusive, although if the abnormally high orders of 1922 are eliminated, 1930 awards are near the average.

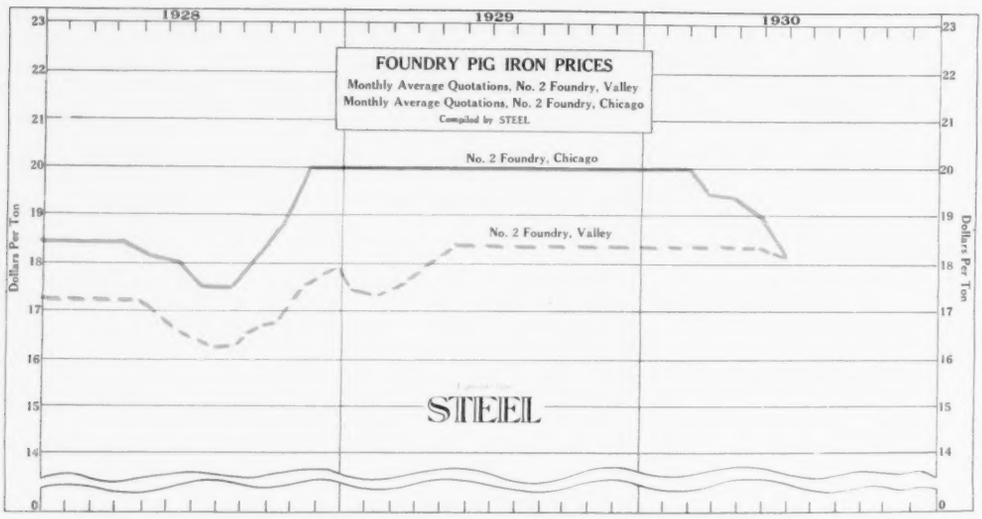
Trend of Freight Car Loadings Diverging from 1929 Record

Another indication of the sub-normal trend of industrial activity during the summer of 1930 is found in the record of freight car loadings. The report for the week ending June 21 shows a further decline from the recovery following Decoration day. This recession comes at a time when the corresponding loadings in 1929 were tending slightly upward. Unless freight traffic during the last part of June was considerably higher than during the first three weeks, that month will not retain its customary position in the rank of first half periods. The 1929 and 1930 curves have been diverging steadily since the first of the year.



	1930
June 21	920,859
June 14	927,754
June 7	935,647
May 31	860,249

	1929
June 21	1,069,874
June 14	1,071,245
June 7	1,055,768
May 31	972,825



Monthly Averages

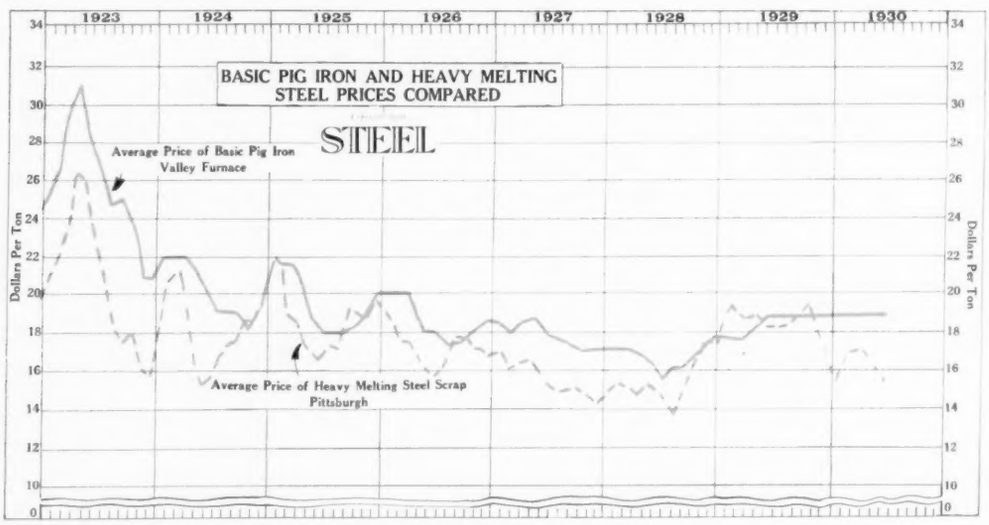
	No. 2 Foundry Chicago	Valley
June, 1930	$18.37	$18.37
May, 1930	19.00	18.50
April, 1930	19.40	18.50
June, 1929	20.00	18.50

No. 2 Foundry Quotations, Valley and Chicago, Attain Parity

Foundry pig iron prices, which resisted depressing influences for a longer period than did quotations of steel products, finally have yielded slightly. No. 2 foundry iron, Chicago, has dropped gradually to $18.00, the prevailing level on July 2. The monthly average for June, however, was $18.37. Foundry iron, valley furnace, after remaining at $18.50 for six months or more, has slipped to $18.37, and for the first time in years the prices of this product in the two important centers are identical. The valley price on July 2 was $18.00 to $18.50.

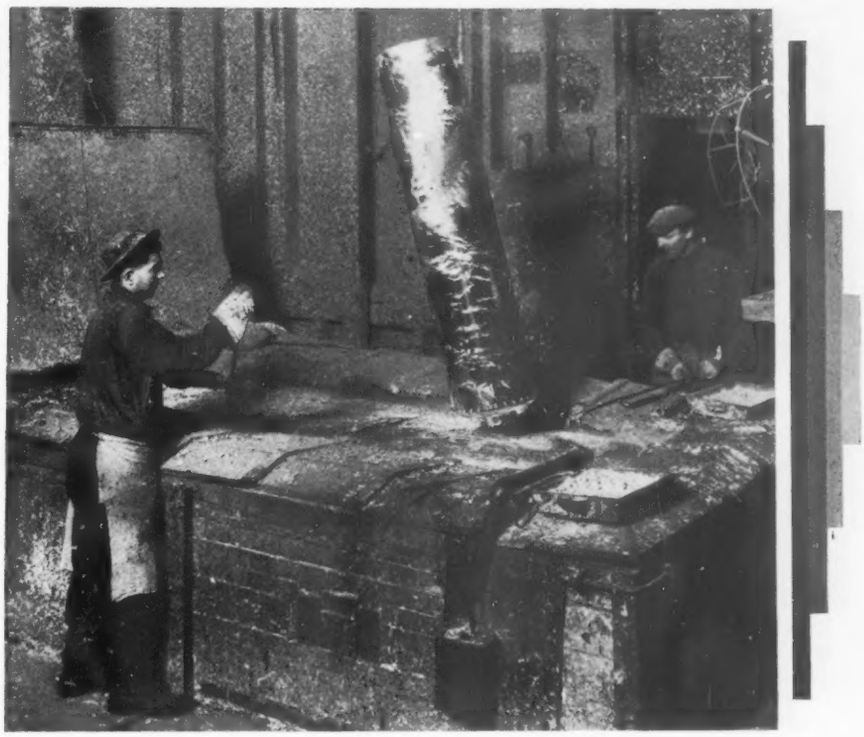
Steel Scrap Responds To Pressure; Basic Iron Stands Pat

Quotations for steel scrap and steelmaking pig iron still present conflicting evidence. Both commodities are important in the production of steel and therefore should respond to the same elements of supply and demand. Notwithstanding this, basic iron has remained at $18.50, while pig irons of practically all other specifications have declined. Heavy melting steel has been more responsive to prevailing influences and in June quotations averaged $15.10. Active trading probably would bring prices of pig iron to closer conformity to the general trend.



Monthly Averages

	Basic Iron	Heavy Melting Steel
June, 1930	$18.50	$15.10
May, 1930	18.50	15.25
April, 1930	18.50	16.05
June, 1929	18.50	18.30



TYPE of gas-fired kettle used for the zinc coating of household hot water tanks. The temperature at which the bath of spelter is maintained ranges from 835 to 845 degrees Fahr.

Zinc Alloys Destroy Galvanizing Pots

BY WALLACE G. IMHOFF
President, Wallace G. Imhoff Co.

ONE of the many practical difficulties encountered in hot galvanizing practice is the destruction of the pot. Some kettles fail quickly; others provide a satisfactory campaign. So many factors enter into the destruction under practical conditions that it is difficult to draw up a definite set of rules to govern their life. Molten zinc, at and above the galvanizing temperature, has a corrosive action upon iron and steel. The fact that galvanizing pots are operated at a high temperature and have a short life, is a definite reason for closely linking the failure of the pots with the temperature. Furnace design is usually at fault when galvanizing pots fail at a low temperature.

While it is true that the molten bath is at a low temperature, some local, small area, is being overheated continuously with the result that failure of the kettle immediately occurs. A case recently occurred where the kettle failed in 11 days. Failure of a kettle in three months is not unusual, however, and in some cases the average life is only five to six months. Granting the steel base to be satisfactory, the life of a pot should be at least 12 to 18 months.

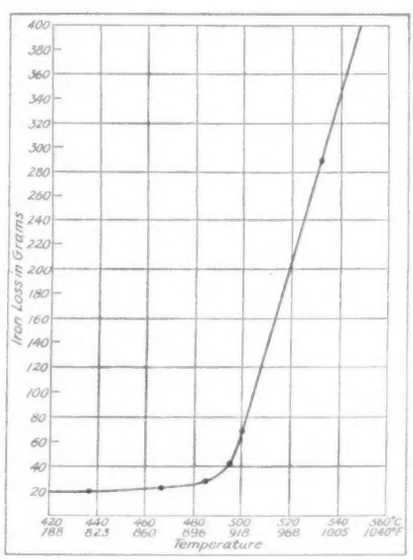
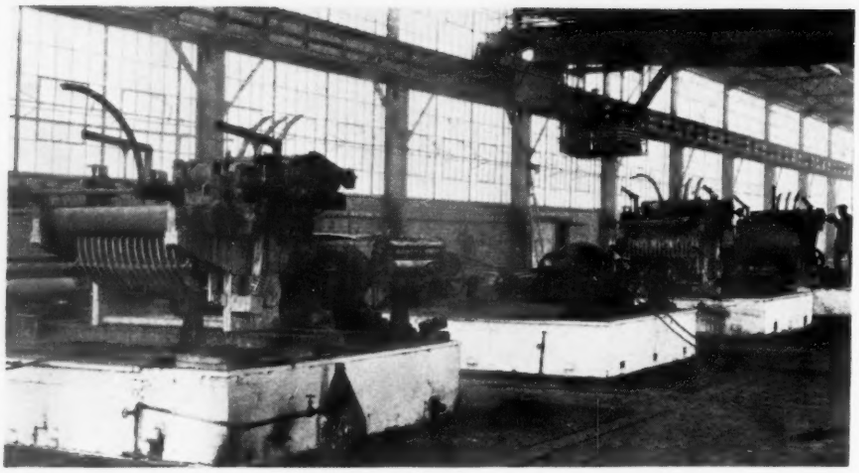


Chart showing the corrosive action of spelter on galvanizing kettles

Production determines the total quantity of heat which must be put into the kettle in a given unit of time. In the metalware industry this means 2200 water pails in a shift of 10 hours or 1200 wash tubs in a 10-hour shift; in the galvanized sheet industry, 3 tons an hour; in the pipe industry, 6 tons an hour; for pipe fittings, 500 to 1000 pounds an hour; and, pole-line hardware, 1 to 3 tons an hour. Note that the production, regardless of the kind of galvanizing insofar as the life of the pot is concerned, should be measured in pounds of steel rather than the number of articles put through the galvanizing kettle. The total quantity of heat put into the spelter is a direct function of the pounds of steel put through the pot as production in a



Battery of galvanizing pots for the zinc coating of steel sheets with conveying machinery removed from the bath of spelter

given time. Large metal capacity in relation to production gives plenty of heat reserve, or heat storage capacity; a small metal capacity in relation to the required production gives little or no heat reserve, or heat storage. The average metal capacity in relation to production is about 10 tons of molten zinc for each ton of production. Thus, an 80-ton pot should produce 8 tons an hour without excessive corrosion of the pot and a 40-ton pot from 3 to 4 tons an hour without quickly destroying the container.

Different Alloys Formed

Pots, which have long life, usually have a different kind of a zinc-iron alloy formed than pots that have a short life. The type of zinc-iron alloy formed, therefore, is a function of the temperature, or heat intensity. Three important factors must be balanced in the proper relation to give a long pot life, namely, the production in pounds, the speed of the work through the pot or the time element, and the metal capacity of the pot in relation to the production in a given unit of time. If the metal volume is large there is heat storage and consequently little fluctuation of temperature of the bath; if the metal volume is small in relation to the production the temperature swings may be violent, with consequent short pot life.

The relation of the heating area to total surface area of the pot also is important. Examples, which show how much of the total surface of the pot is heated, are as follows:

Total area, both sides, sq. in.	Area heated sq. in.	Area heated per cent	Type of fuel
21,888	10,944	50.0	Gas
29,952	15,840	52.8	Gas
13,824	7,200	52.2	Gas
9,504	7,128	75.0	Coal
16,128	11,232	69.0	Coke

The heating area should average about 60 per cent of the total area because the angles on top of the pot, and the rivets at the ends and the bottom must be protected from direct action of the heat. From the standpoint of pot life most of the heat should be applied above the dross line.

While the total surface area may be fairly large, the actual heat must be derived from a surface of only about 60 per cent of this area. In addition, especially with gas fuel, the side often is divided into four or six small combustion chambers and the brick dividing walls, therefore, would bring such pots nearer the 50 per cent limit.

If it were not for the fact that the zinc destroys the pot by alloying with the steel on the inside, the 50 to 60 per cent heated area probably would not matter. But there is a distinct relation between the heat intensity and the area heated. The smaller the heating area, the greater the heat intensity; and the larger the heating area, the lower the heat intensity, when the production, in pounds, is constant.

Pintsch has shown that the chemical composition of the steel base affects the destructive action of the zinc upon the iron in the steel sides of the pot, but he concludes that the temperature is by far the most vital factor affecting the corrosion of the steel. Taboury also has investigated the surface alloy crystals in iron galvanizing pots which have been in contact with zinc at or above melting point for several months. Hamlin and Turner quote a test showing rather rapid dissolving effect of zinc on ferrosilicon at a temperature as low as 420 to 450 degrees Cent. Pospielow states that zinc vapors attack platinum electrodes forming an alloy. The tests show an alloy was formed by platinum and zinc. The platinum wire was increased in diameter. The platinum lost its flexibility completely as a result, and became brittle.

New Kettles Suffer

The severest corrosion of the galvanizing pot probably takes place when placing a new kettle in service. Practical galvanizers who have studied this alloying action of molten zinc with iron have found that only a mild action takes place from 787 degrees Fahr., the melting point of zinc, to 860 degrees Fahr. At 860 degrees Fahr. the action is perceptible. At 870 to 885 degrees Fahr. the action increases slowly in intensity. This increased activity is reflected in dross production as compared to pots continually operated between 835 to 845 degrees Fahr. For example range boilers, which go through the bath slowly, usually are coated at this temperature. On the other hand, light water pails of 28-gage steel, which chill quickly, usually are coated at a temperature ranging from 855 to 865 degrees Fahr. In other branches of galvanizing the appearance of the spangle is not as important as the tonnage. For pipe a temperature of 880 degrees Fahr. is required for a production of about 6 tons an hour.

The number of articles coated at one time has a direct bearing on the failure of kettles. Some articles are bulky, others are small and heavy such as nuts. The pot temperature must be held to suit the finish required and to meet the demands of production.

Zinc-iron alloys formed in galvanizing pots are identified closely with the heat distribution. The intensity of the corrosive action depends on the temperature; the kind of zinc-iron alloy formed is a function of the temperature, the time, the amount of zinc present, and the

IN HOT galvanizing so many factors influence destruction of the pot that it is impossible to establish definite rules to govern pot life. However, in this article, the first of two, the author describes various types of failures and makes numerous suggestions which should enable the galvanizer to get the most from his equipment. The concluding article, dealing principally with pot failures, will appear in an early issue of STEEL. The author, Wallace G. Imhoff, is president, Wallace G. Imhoff Co., Vineland, N. J., well-known consultant in zinc coatings.

amount of iron present in the bath.

Laboratory experiments have determined the exact intensity of the destructive action of the zinc from its melting point far above the galvanizing temperatures. It is seen from the accompanying graph that below 860 degrees Fahr. the corrosive action is slight, while above 900 degrees Fahr. the action becomes accelerated.

Practical Side Studied

A study of the practical side of the zinc-iron alloys centers about the pot destruction and the formation of dross. Rawdon says, "In many instances, a layer of lead 6 to 8 inches or more is used in the bottom of the zinc bath. The two metals, zinc and lead, are miscible only to a slight extent. The main purpose served by the lead layer is to prevent overheating of the lower walls of the container, particularly when the pot first is started; and, to reduce the attack of the zinc upon the hot walls of the container, thus adding to its life, and also minimizing the amount of zinc-iron alloy, or dross formed." Causes of corrosion and destruction of zinc coating or galvanizing pots include:

1. Overheating
2. The powerful alloying and dissolving action of molten zinc at and above galvanizing temperatures.
3. The formation of large grains or spherules of zinc-iron alloy. The development of these spherules is best explained by "the crystal development theory."
4. The alloying, transfusion and penetration of the molten zinc into the iron, and the iron into the zinc, forming crystals, or spherules of a nonductile, nonmalleable, brittle zinc-iron alloy.
5. The disintegration of this zinc-iron alloy in the form of crystals which float off into the molten zinc, thus subjecting new parts of the zinc-iron alloy to the same action, and the continued disintegration bringing about the corrosion and the final destruction of the firebox steel side of the pot.

To be concluded in an early issue of STEEL.

Simple Tests Will Determine Sheet Weldability

Since weldability of sheet steel depends largely upon the quality of the material, good material must be selected. To aid in this selection a simple test suggested by the Linde Air Products Co., New York, will be found helpful. Chemical properties alone are not a criterion of the action of the sheet during welding as this depends a great deal upon the presence of minute impurities in the steel. These impurities may not show up under the microscope, cannot always be determined by chemical analysis, and are especially troublesome in thin sheets.

With these factors to be considered, the advisability of testing sheets from the mill is apparent. Such a test can be made in the following manner: Select a piece of sheet from the lot, about 6 inches square and place it flat on the welding table. Fit a welding tip to the blowpipe of size smaller than that prescribed by the welding chart. Light the blowpipe and adjust the flame to neutral. Hold the blowpipe so that the tip of the inner cone of the flame is about ⅛ inch away from the sheet. Move the flame slowly along a straight line so that the sheet will be melted without burning all the way through. After a strip about 3 inches long has been melted in this way, hold the blowpipe motionless until a hole is burned through the sheet.

If the sheet is high grade the path followed by the blowpipe will be free from an excess of oxide or scale and regular and smooth on the upper side. The under side of the test sheet will show a slight sag of smooth metal, free from oxide. The hole will be round and have smooth, rounded edges.

Sheet of inferior quality will show an oxide deposit on the upper side, part of which will be porous or flaky scale. There will also be a succession of irregular ripples, higher in the center than on the edges. The under side will show a sag that is covered with oxide. There may be a series of small holes blown through by the sparking action of the impurities. In poor sheet the metal will be burned through very soon after the blowpipe is held stationary, in much less time than is necessary to put a hole in good sheet. The hole, incidentally, will be irregular with rather ragged edges. When the test sheet cools examination will disclose porous, spongy looking globules of oxide on the edges of the hole.

Steel Treaters Publish New Metals Handbook

Expanded and brought up to date in every detail, the 1930 *National Metal Handbook* has been completed by the American Society for Steel Treating and is ready for distribution. Members of the society may receive copies by sending the old handbooks to J. Edward Donnellan, secretary of the recommended practice committee and editor of the handbook, at Cleveland. The new handbook is said to be the most complete edition yet published. It contains over 250 more pages of material than the earlier edition, about half of which are devoted to nonferrous subjects and the remainder to steel and topics of an allied nature.

Gas-fired kettles employed for the galvanizing of wash tubs and pails. The temperature of the spelter bath is 855 to 865 degrees Fahr.

Machine Tool Builders Plan Fall Cost Conference

Prompted by the unqualified success of the cost conference held by the National Machine Tool Builders' association in Cleveland in April, the association has made plans for a cost conference still more general in scope, to be held at Hotel Clifton, Niagara Falls, Ont., Sept. 22 and 23.

This offers an unusual opportunity for machine tool builders to discuss the important technique of cost finding and to learn about recommended principles. Ernest F. DuBrul, general manager of the association, points out that it will be decidedly good business for member companies to send key men to this conference. He also urges that questions for discussion be sent promptly to the association headquarters in Cincinnati, so that complete and authoritative answers can be prepared well ahead of the meeting by A. E. Grover, the association's cost expert.

Research and Promotion Will Aid Castings Industry

BY ROGER L. WENSLEY
President, G. M. Basford Co.

A SHORT time ago the brains of business were concentrated upon problems of production. With the aid of machinery radical economies in production costs were accomplished with substantial increase in profits. Today, while we have not exhausted the possibilities of reducing costs through the application of machine methods, production has been crowded into the background by the growing problem of disposing of our products.

All over the country business executives are focusing their attention on the cost of distribution; the problem is to dispose of products that are now made so economically. Confronted with a large surplus of productive capacity, the steel castings industry, to improve its situation, must stimulate the broader use of cast steel and by improved methods of merchandising distribute its products economically and at a profit.

In considering the merchandising of steel castings and in making recommendations looking to the extension of markets the first step is to analyze the product. What have we to sell; how is it at present regarded by the trade; what, if anything, is needed to prepare the product for a broader usefulness; what obstacles block the way to increased volume?

Advertising Molds Opinion

Advertising and merchandising are not miracle workers. They cannot magically transform a steel casting into an article of commerce that waiting millions will rush out to buy. But when properly directed they can mold favorable public opinion and stimulate business. But instead of rushing into print it is desirable to examine the existing situation and then fit the forces of advertising to the job to be done.

If it were possible to obtain an unprejudiced statement from castings users I think there is little doubt but that the consensus of opinion would be that steel castings today are of higher quality, better finish, possess higher physical qualities and are altogether far more satisfactory than any which it was possible to obtain ten years ago.

In the early days of the steel foundry industry, before technical knowledge had been advanced to its present highly developed state, there were admittedly times when cast steel was a disappointment. Many an unfavorable opinion concerning the dependability and quality of cast steel now possessed by some engineer in a position to influence specifications had its origin years ago. He still harks back to this time in his thoughts whenever cast steel is suggested.

Correcting an Old Idea

No aggressive sustained effort has been made to modernize his thoughts on cast steel and convince him that the steel foundry industry has progressed step by step with other industrial developments.

Each individual steel founder has been too busy digging up tonnage to devote his time to the broader consideration of how his industry is regarded. He might frequently despair at the ignorance of modern cast steel displayed by men who should know better. But what chance has one man to fight the battles of an industry? Now, however, the steel foundries of the country through the Steel Founders' Society of America, can act concertedly to bring to the steel casting industry the recognition it deserves.

If ignorance concerning cast steel were confined to a few scattered individuals the problem would not be so serious. But unfortunately many otherwise well-informed engineers have this backward attitude. Even so recently as the time of the World war, steel castings were looked at askance by high authorities in ordnance matters. Some of our large steel foundries proved then that steel could be cast in its final shape just as soundly as when it was cast into ingot form and subsequently worked into the desired final product.

But the average engineer when he thinks of cast steel still thinks of material that is not essentially as sound as the rolled or forged product. This point of view must be corrected for the good of the industry.

Improvement in this situation lies in two directions. The first is with the foundry itself which by personal effort should educate its customers to what constitutes sound casting design and attempt to maintain such a close and confidential relationship with its customers that its advice will be encouraged when new parts are on the drawing board and its recommendations incorporated in the design of the product. This takes a good deal of business courage but it is a source of action which, if followed by each and every foundry, would result in benefit to all.

Internal Difficulties Present

But the ignorance of the designer is not alone responsible for present-day disappointments in casting performance. An internal situation within the industry calls for correction. If some backward price-cutter who, to make any profit, must necessarily shove through his plant a hurried, low quality, slip-shod job, places an unsound casting in service, he injures the industry. Good quality is by no means a complete protection to the steel foundry producing it. The market is affected adversely by every poor casting that fails in service. Questioning a dissatisfied buyer of castings about those parts from which he has experienced the greater part of his difficulty discloses that he has shopped about with this particular casting, pitting one foundry against another on a price basis and in many cases he is fundamentally to blame for the poor quality he obtains.

The days have long passed when competition meant, figuratively, mortal combat with bowie-knives in a dark room. In this day and age, business men, statesmen and economists all recognize the principle that national prosperity cannot be based on the principles of jungle

SUCCESSFUL merchandising of steel castings demands concerted and co-operative effort along several lines; correction of internal malpractices in the industry, «trading up» the product in the minds of designers, and waging intensive campaigns to win «fringe markets». These subjects are dealt with in considerable detail in the accompanying article, portions of a paper presented at a meeting of the Steel Founders' Society of America, June 26, at White Sulphur Springs, W. Va. The author, Roger L. Wensley, is president, G. M. Basford Co., New York.

competition and fighting in the dark.

The reasons for existence of any business, the only excuses a man has to employ labor and capital, are to produce something of real value, to pay wages to employes, and to produce a profit for his stockholders. Profit never results from price wars carried on in the dark by people ignorant of their own costs. Some day the ignorant price cutter, who does business at a loss will be considered an economic criminal.

But apart from correcting the unfortunate conditions confronting the industry there is the problem of extending existing markets. The starting point of these activities is research.

Aggressive development and metallurgical research to improve the product of the steel casting industry is an essential part of a merchandising program. To effect a change in the attitude of industry toward cast steel there must be a thorough foundation, in fact, a foundation of better castings and castings particularly suited by special composition to meet unusual conditions of service. A new era in steel is here and the steel foundry industry must not be caught lagging. New processes, ranging from the first handling of ore to the final processing of sheet or tube, are keeping the steel industry on tip-toe, forcing even the old, and well-established departments of steel to discover short-cuts and develop new methods.

From Commodity to Specialty

The steel casting must be lifted out of the category of a basic commodity and carried into the field of the specialty. Basic commodities are bought and sold on a price basis. The modern steel casting is an engineered product involving service. In soliciting inquiries steel castings should be carried beyond a mere price consideration to the higher levels where the customer relies upon ability, integrity and honesty and is willing to let the steel foundry supply his requirements at a figure that will net a reasonable profit.

A "trading up" program as it is commonly called should start with technical research and metallurgical and product development and carry through to a co-operative presentation of these improvements in steel foundry practice and what they mean to the buyer of castings. The Steel Founders' society has made a vigorous attack upon the problems of the industry as a whole and is showing definite progress. The "trading up" program is an activity which it can properly foster because only by co-operative effort can a better regard for steel castings be built up in the minds of buyers. Only by a co-operative effort can the industry attain the general position of regard to which the achievements of its progressive members entitle it.

Invading New Markets

But the "trading up" of steel castings is a long-pull job, not to be accomplished in a few months. So, too, are the results to be expected from a program of research and product development. However, immediate possibilities of extending the market for steel castings suggest themselves. How can this be done? Where is the increased business coming from aside from the normal growth of the country's industries?

The "fringe market" is one source of new business. There are certain acknowledged uses for cast steel where cast steel is pre-eminent and does not suffer from competition with other forms of metal. Conversely there are uses for which welded pressed metal and similar competitors of cast steel are best suited. Passing from one zone in which cast steel is supreme to the zone where competitive classes of material flourish we go through a "no man's land" where there is no decisive choice of product form. Here lies the "fringe market." Here is one place where the use of steel castings can be exploited profitably. Here is real business of good volume, to be won by selling the buyer a better appreciation of steel castings and bringing him up-to-date in his thinking.

In addition to attacking the "fringe market" another field is open for extending the use of cast steel and improving the profits of the foundry. That is in the rapidly growing employment of special analysis and alloy steels including heat and corrosion resisting castings. Here many steel foundries are already closely in step with industry, extending castings into fields where they have never been used before.

Corrosion-resisting steel castings are coming rapidly into vogue in the hardware and architectual fields as well as serving less spectacularly in the chemical, food-products and petroleum industries. But the increased market made possible by the development of special analysis steels is far broader than such highly specialized examples would indicate. Everywhere industry is demanding greater power, higher speed and larger capacity. Parts are being stressed beyond the limits of ordinary steel, yet the desire for light weight together with space limitations discourage any increase in the size of the parts. Better materials are the answer; and due to research, metallurgy and improved foundry practice, new cast steels are being made available for the new responsibilities.

It is the function of advertising to spread the news of these developments throughout the length and breadth of industry, so that when an engineer thinks of alloy steels he thinks of castings as well as of rolled products.

These special analyses and alloy steels are in line with the "trading up" policy urged previously. They give the steel castings producer a chance to lift his product out of the ruck of common steel castings —to transform it from a basic commodity into a specialty which he can merchandise.

Foundries pursuing this policy have generally chosen a trade name for their special steels and then driven this trade name into the consciousness of their prospects and customers. Physical properties rather than chemical analyses have been featured. Emphasis has been laid on a special steel for a special job.

Trade Mark Gives Edge

Even where competition offers an alloy casting of comparable physical characteristics the advantage is all with the proved, trade-marked product. Identify the special steel and make its name familiar to the trade and an insurance policy against unreasonable price competition is established.

In addition to the benefit the individual foundry gains from the establishment of a series of trade-marked steels a broader benefit is derived by the whole industry. The more the attention of the buying public is focused upon the improved properties of cast steel the quicker it can be diverted from mere price considerations.

Not only is the demand of industry for more intensive service from equipment stimulating the use of special analysis and alloy cast steels but it is extending the "fringe market" into fields once strongly held by other materials. One outstanding example of this is the rapidly growing sentiment in favor of cast steel for locomotive cylinders.

While individual foundries have done splendid work in developing new uses for cast steel the problem of commercial research in steel castings is eminently an undertaking for the entire industry working co-operatively rather than for any individual foundry.

But aside from the merchandising of alloy castings and the development of new uses for cast steel there still remains the need for educating the designing engineer regarding the fundamental advantages of cast steel over other materials. This is properly a part of the major offensive to

(*Concluded on Page* 60)

LARGE USES OF STEEL IN SMALL WAYS

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170th Article

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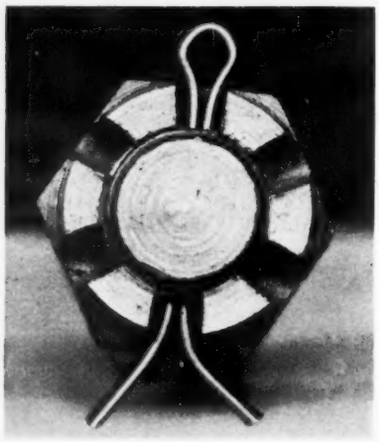

Cotter Pins Take 5000 Tons of Steel a Year

STEEL consumed in the manufacture of cotter pins in the United States amounts to approximately 5000 tons annually. The steel is in the form of wire, drawn at producers' mills to half-round shape, and sold as cotter pin wire. It is ordinary low-carbon quality, containing 0.08 to 0.12 per cent carbon. The wire is fed into automatic machines and the pins manufactured so rapidly and economically that they are among the lowest price products of such machines. An assortment of 100 packed in a sheet steel box sells in the retail market at 15 cents.

Is a Safety Device

A cotter pin is essentially a safety device, a bit of wire thrust through a hole in the end of a bolt, holding down a nut and thus keeping moving parts intact. The automotive industry, from factory to garage, is the largest single consumer, and it is highly probable the average automobile would not continue in operation many weeks or months without cotter pins. Fords and Chevrolets use from 40 to 50 in each car, and the higher price machines have considerably more. New cotter pins are needed when machines are repaired. Manufacturers of mechanical household equipment are among the leading consumers. Factory equipment requires large numbers. Railroads take the greatest range in sizes. The heaviest cotter pins made commercially, ¾-inch diameter and 22 inches long, are used in the assembly of locomotives.

The origin of cotter pins is lost in antiquity. Some of the most ancient were held together by mortice and tenon joints, with wood plugs iest definition of the word cotter is modern steel cotter pins. The earliest definititon of the word cotter is "a tapered piece of wood or metal used for fastening parts of a machine or structure together." The flat wood or metal cotters could fall out of the recesses or holes they were intended to fit, while a piece of metal bent or twisted was found to give more security.

Cotter pins now are made practically as fast as nails. Machines equipped with the proper fixtures can turn out from 200 to 300 a minute of the smaller sizes. The wire is first cut to length. A plunger strikes the wire in the middle and bends it in the form of a loop. Other parts squeeze the two ends together and eject the finished cotter.

The slight spring which cotter pins possess is not generally due to the quality of steel used, but to the loop in the head of the pin. Many manufacturers make cotter pins as a part of a nut and bolt manufacturing business. Some makers say the composition of the steel they use is practically the same as that for their nuts and bolts. Some manufacturers have tried to make cotter pins as a sole product and have failed; those most successful produce them as part of a line of bolts, nuts, rivets, burrs, staples and tacks. About a half dozen manufacturers produce the bulk of the cotter pins in the United States. Pins made of brass and other nonferrous metals do not exceed 2 or 3 per cent of the total.

The smallest steel cotter pins used in general manufacturing purposes is 1/16-inch diameter. The two half rounds of the wire when placed together give the diameter of the cotter. The size of the great majority of cotter pins in use is 3/32-inch diameter and 1 inch long. One thousand of this size weigh 2½ pounds. If all the steel consumed in the manufacture of cotter pins were to be made into this size the number would be 4,000,000,000 a year. Allowing for sizes and numbers under and above the average, the sales department of a leading manufacturer estimates the total as approximately four billion.

Studies Creep Tests of Metal at Elevated Temperatures

In the July issue of the bureau of standards *Journal of Research* are given the results of creep tests at different temperatures for 29 different alloys. The metals tested are representative alloys of iron with varying proportions of nickel, chromium, tungsten, vanadium and molybdenum in the rolled, forged or cast condition. Some of the material was heat treated following the mechanical working.

The chemical compositions of most of the materials are such as are used in the fabrication of heavy equipment for oil refineries, power plants, chemical plants and for the extrusion of metals, all of which are required to operate at high temperatures and pressures for long periods of time under severe conditions. Charts are given to permit the approximate determination of such stresses as well permit the metals to last for definite periods with specific amounts of deformation. The general trends at 1000 degrees Fahr. in the load carrying ability of castings in the nickel-chromium iron system also are discussed in detail and show some of the compositions best able to resist creep.

Production of Natural Gas To Be Discussed

Discussion of the development of and problems connected with the production of natural gas is to be one of the principal topics to be considered at the annual meeting of the American Gas association to be held at Atlantic City, Oct. 13-17. At the meeting, the nominating committee of the association will present the following names. For president, Clifford E. Paige, vice president, Brooklyn Union Gas Co., Brooklyn, N. Y.; for vice president, R. W. Gallagher, president, East Ohio Gas Co., Cleveland and for treasurer, W. J. Welsh, president, New York & Richmond Gas Co., Staten Island, N. Y.

Preliminary analysis of the federal census of Chicago indicates 135,000 persons, or 4 per cent of the city's population of 3,373,753 persons, are unemployed.

Model 24-P ejection type press, having box 100" long, 20" wide, 42" deep. Finished bales measure 20" x 14" x 14" minimum. Can be equipped with power operated loading hopper.

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Better Business Is Goal of Trade Associations

ADEQUATE financing of trade association work was declared essential to its final value by Dr. Hugh P. Baker, trade association department, Chamber of Commerce of the United States, at the meeting of the Steel Founders' Society of America, June 26 and 27, White Sulphur Springs, W. Va. Dr. Baker stated that trade association dues amount to a real business investment upon which a return should be expected. He warned against the reaction which may attend too great devotion to the doctrine of mergers which is sweeping the country, and called the trade association a constructive force for the maintenance of industrial democracy. The trade association was defined as an organization of business men in and serving an industry or trade for mutually helpful service and better business. Trade promotion through the three factors; research or education, advertising and servicing the commodity manufacturer is the true function of a good trade association.

The second of these functions, namely advertising in its relation to merchandising of steel castings was covered by Roger L. Wensley, president, G. M. Basford Co., New York. Portions of this paper are presented on Page 50 of this issue of STEEL.

Appointment of a council or commission to consist of representatives of finance, labor, industry and economists to develop the real causes which prevent profitable operation of manufacturing establishments was suggested by Charles F. Abbott, American Institute of Steel Construction, New York. The present condition in business may serve to impress the lesson that price must be cost plus a profit. Of the many reasons given for unprofitable operation, Mr. Abbott stated that individual selfishness heads the list. Overproduction brought about the present decline and some means should be found to rationalize demand.

Industry Must Co-operate

According to Mr. Abbott, public welfare demands profitable business, the only assurance of prosperity. Industry can best bring about a proper condition only through co-operative activity. The first question which should be solved is commercial research. Costs as a basis for establishing a fair profit are paramount and these should in no measure be computed from competitors' prices.

Sound selling practice was listed as the second important function of a trade association. The first step to be taken by a group such as the steel founders is to sell castings and next the obligation of individual members is to sell contracts for castings. A one-bid policy, the greatest deterring factor in price cutting was emphasized and the society was urged to abide by the price per piece policy as opposed to the price per pound.

The volume error is responsible for many cases of price cutting. The effect is far reaching, as any foundry can cut the price but arduous work is required to restore such a price to a profitable level. The foundry which cuts prices to keep its owners from starving was excused, but it was suggested that competitors owed it to themselves in self-protection to aid a foundry in such a dilemma and thus prevent a depressed price level.

Advertising was recommended to supplement efficient selling and to promote demand. Public understanding and recognition of the merits and advantages of the product can be built only upon sound advertising. Advertising can be applied to any commodity, no matter how technical may be its character and the consumer or the public determines whether a steel casting or some competitive product will be used.

Individualism To Blame

With more than 3000 existing trade associations, encompassing a membership in excess of 450,000, individualism still is responsible for losses in business, according to E. St. Elmo Lewis, Detroit, who spoke on the demands of the buyers market which obtains at this time. He stressed the value of fact finding and exchange of information, citing the automotive industry and the beneficial efforts of the organization which extends its co-operative effort even to the pooling of patents. He recommended the use of advertising and deprecated the tendency to reduce advertising appropriations in times of poor business. As an example of a wiser and more energetic policy he told the common brick manufacturers who through their trade association increased advertising on a falling market and by intensive effort built up a demand for the product.

The fundamental precept of selling is that a sale must be mutually advantageous to buyer and seller, according to W. H. Worrilow, who addressed the steel castings division on problems of selling. The seller's first thought should be of the buyer and it should be demonstrated that the buyer's credit is good and that his specifications for a steel casting which he is purchasing are reasonable and can be met. Use and satisfaction determine future sales and no foundry can profit on orders which are not found satisfactory and repeated.

Concerning the evils of price cutting, Mr. Worrilow said: "The foundry which cuts prices . . . immediately places the fate of its business in the hands of its competitors. It must go as far as its competitors wish to take it. A fixed price and a price per piece is the cure."

In the discussion which followed, John E. Galvin, Ohio Steel Foundry Co., Lima, O., mentioned a failing of salesmen who agree too quickly with a purchaser who may claim defective castings. An error and defect claim in many cases may arise from a machinist working piecework who falls behind, claims a defect and is supported by the foreman and the purchasing agent in a claim which is not justified.

Seek Cost Reduction

Individual costs were recommended and the single order which in many cases costs from $2.50 to $4.50 in pattern handling, pattern alterations, clerical work in entering, routing and billing and in shipping was put under scrutiny with a view to making this troublesome one-time order carry its charges.

Three phases of steel foundry detail, namely, the metallurgical, mechanical and administrative, were discussed in a paper by F. A. Melmoth, Detroit Steel Casting Co., Detroit. He contrasted a casting which often is a complicated piece of work with a steel ingot. With every chance to make its form and casting requirements comply with the best design to yield a perfect casting, uniform perfect ingots still are difficult if not impossible to attain.

Three points were suggested in the attack upon the complexities of making steel castings. These were to obtain steel of stronger crystalline cohesion at high temperatures after solidifying to resist rupture when cast in a complicated mold. The second point was to vary the composition in some simple manner to prevent mold gases. The third was to lower the fusion point of steel by some addition which will not affect the finished casting adversely. Advances were prophesied in heat treatment to produce better effects in the ultimate crystalline arrangement in steel castings.

To Classify Structural Steel

At the request of the American Institute of Steel Construction, the bureau of the census, Washington, is making a special survey of the proportion of structural steel output used in buildings, bridges and other heavy structures and light structural work covering 1928 and 1929. Heretofore, no detailed information on the type of construction in which this tonnage is used has been available.

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Flexibility Is Advantageous in Converter Steel Practice

FLUIDITY of steel for casting purposes evoked considerable comment at the twenty-seventh annual convention of the Institute of British Foundrymen, held at Middlesbrough, England, June 17-20. Fluidity in converter steel is due mainly to the presence of oxide of iron, it was pointed out. W. Shaw, Middlesbrough, declared that in open-hearth practice fluidity is not excessive and sound castings are produced. J. Deschamps, director of Kryn & Lahy (1928) Ltd., stated that the question of fluidity versus oxidation is a controversial one, and even assuming that fluidity is due to the presence of oxide the actual problem can be checked only by the examination of test pieces which are cast on the casting. He concluded that it is immaterial whether or not oxides are present in the steel.

Steel foundry questions were brought up for consideration at a session devoted to that purpose, three papers presenting certain aspects of the field. The exchange paper of the Association Technique de Fonderie de Belgique dealt with the preparation of metal for steel castings in the converter, and was followed by a paper entitled, "The Future of the Side-Blown Converter in the Steel Foundry," by Mr. Deschamps. The third paper discussed the economic utilization of compressed air in steel foundry practice.

Furnace Merits Cited

Merits of electric steel furnaces, open-hearth furnaces and converter steel practice were cited. The flexibility of the converter process where its use is justified by the class of work was mentioned as a distinct advantage. As a matter of interest it was pointed out that in 1929 between 3500 and 3700 tons of locomotive castings were made by the converter process in Great Britain for the home railways, while only small quantities were made by the electric process.

The American exchange paper, "Briquetting Cast Iron Borings," by Fred. J. Walls, chief metallurgist, Wilson Foundry & Machine Co., Pontiac, Mich., was presented by V. Delport, European manager of STEEL. The subject was of considerable interest but some doubt was expressed as to whether in Great Britain the output of foundries was large enough to justify the installation of a machine such as was described in the paper.

J. E. Fletcher, associated with the cast iron research association, warned of dangers presented in the problem of using all-mine pig iron as against mixing steel in the charge, a principal one being an economic consideration, in view of the fact that at the present time many furnaces are going out of blast in Great Britain due to a receding demand for pig iron.

F. P. Wilson, Pease & Partners Ltd., Middlesbrough, in his presidential address urged that the commercial side of the foundry trade should not be overlooked, particularly the question of costs and standard methods of costing. In passing Mr. Wilson stated that according to figures of the British Cast Iron Research association the annual value of iron castings, without finishing costs, produced in Great Britain reached £40,000,000.

The Oliver Stubbs medal was awarded to J. Ellis, president of the institute from 1916 to 1917, for "sterling work done for the institute and more particularly for his encouragement to the junior section."

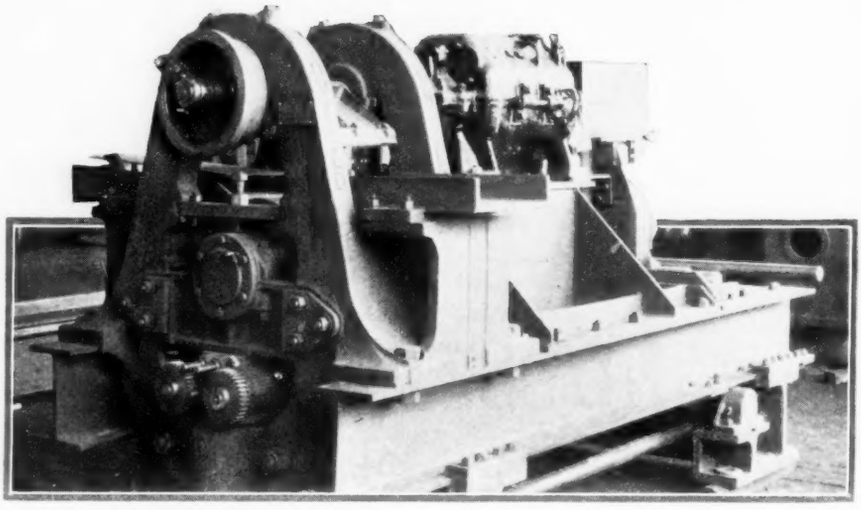
Heading the list of officers chosen at the meeting is the new president, F. P. Wilson. Other choices for institute offices are as follows: Senior vice president, A. Harley, foundry manager, Daimler Co. Ltd., Coventry; junior vice president, V. Stobie, steel founder, Oakfield, Ryton-on-Tyne; honorary treasurer, W. B. Lake, London branch; and general secretary, Tom Makemson, St. John street chambers, Deansgate, Manchester.

Unemployment Estimates Do Not Harmonize

Recent estimates of the number of persons normally out of work in the United States and the April census returns on unemployment do not jibe. Scanning preliminary figures indicating the number able to work but unable to find employment is 2,000,000, Secretary of Labor Lamont remarked that it was "considerably less" than the estimates generally current. In an area inhabited by one-fourth of the country's total population the census returns show 574,647 jobless. This is actual for 756 counties and 75 cities distributed over the continent. Less than 3 per cent of the "working" population were idle in April, according to this basis.

The normal number of unemployed, even in the busiest periods, has been variously estimated at 2,000,000 to 4,000,000. There may have been some confusion in the census on the question of temporary layoff.

Rotary Flying Shear Is Direct Coupled



A NEW type rotary flying shear for cutting strip steel, skelp, small rounds, flats, etc., into suitable hot bed lengths is a recent development of the United Engineering & Foundry Co., Pittsburgh. The unit is equipped with a flying cutter coupled direct to a mill-type motor and an anvil roller which is driven by a separate motor at the same speed as that of the material being cut. A control apparatus of special design enables the operator to synchronize the speed of the flying cutter and the anvil roller.

Another important feature is the novel operating cycle which permits the shear to operate at various speeds up to 3000 feet a minute by a start and stop motor without the use of any propelling power. A shear of this type now is in operation and three additional ones are in the course of construction.

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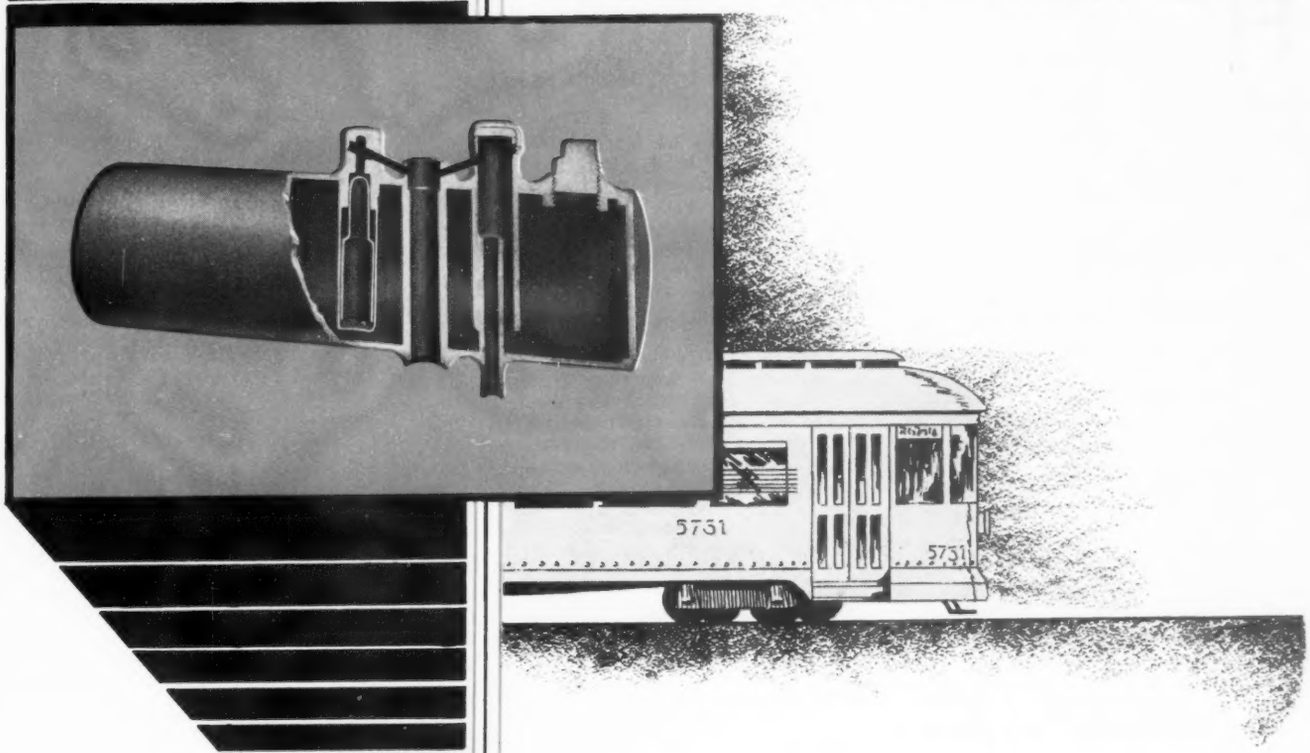

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Steel Treaters Plan Second Nitriding Symposium

HARDENING of steel by nitriding again will be the foremost topic for discussion at the National Metal congress which is to be held at the Sevens hotel, Chicago, Sept. 22-26. Last year in Cleveland, the American Society for Steel Treating, principal sponsor of the congress, scheduled a symposium of two sessions on this subject. The interest developed was so keen that decision was reached to arrange a second symposium. In the tentative program just announced for the 1930 meeting at least five technical papers dealing with various phases of nitriding have been listed.

A new feature of the technical program will be a conference on sales methods and problems and this will constitute the first effort made by the Steel Treating society to interest itself in the field of merchandising. At the session set aside for this topic Alvin C. Busse and Prof. R. C. Borden, New York university, New York, will present their dramatized exposition of selling methods designed to illustrate salesmanship.

Seven Groups To Participate

Participating in the metal congress this year, as in recent years, will be the American Society for Steel Treating, the institute of metals division and the iron and steel division of the American Institute of Mining and Metallurgical Engineers, and the iron and steel and machine shop practice divisions of the American Society of Mechanical Engineers. The American Welding society and International Railroad Master Blacksmith's association will be holding meetings concurrently. The machine shop section of the mechanical engineers returns to the congress after an absence of several years, while the railroad blacksmiths group is coming in for the first time.

The tentative list of papers and authors for the congress has been announced as follows:

"Nitriding, Packing Materials and Ammonia," by A. B. Kinzel and J. J. Egan, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Further Investigations in Nitralloy," by Robert Sergeson, Republic Steel Corp., Canton, O.

Paper on nitriding or case hardening steels, by H. W. McQuaid, Timken-Detroit Axle Co., Detroit.

Paper on nitriding process, by J. H. Higgins, Camden Forge Co., Camden, N. J.

"Nitriding Furnaces and Equipment," by W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"High Test Cast Iron," by F. B. Coyle, International Nickel Co., New York.

"Fatigue Tests on Very Small Specimens," by R. E. Peterson, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Physical Properties of Fine Bolts," by H. B. Pulsifer, Ferry Cap & Set Screw Co., Cleveland.

"Cold Heading Die Life," by A. S. Jameson, International Harvester Co., Chicago.

"Electrolytic Decomposition of Cementite and Austenite," by H. A. Schwartz, G. M. Guiler and H. H. Johnson, National Malleable & Steel Castings Co., Cleveland.

"Cemented Tungsten Carbide," by Gregory J. Comstock, Firth-Sterling Steel Co., McKeesport, Pa.

"Forging Practice at Naval Gun Factory," by W. L. Blankenship, U. S. Naval Gun Factory, Washington.

"Stresses and Cracks in Hardened and Ground Steel," by G. R. Brophy, General Electric Co., Schenectady, N. Y.

"Various Heat Treatment Furnaces," by W. A. Timm, Western Electric Co., Chicago.

"Resistance of Steels to Abrasion by Sand," by S. J. Rosenberg, bureau of standards, Washington.

"Radiography by the Use of Gamma Rays," by R. F. Mehl and Charles E. Barrett, Naval Research Laboratory, Anacostia, D. C. and Gilbert E. Doan, Lehigh university, Bethlehem, Pa.

"Study of the Critical Ranges in Pure Iron-Carbon Alloys," by R. F. Harrington, General Electric Co., Schenectady, N. Y., and W. P. Wood, University of Michigan, Ann Arbor, Mich.

"Mono-Brom-Naphthalene System of N. A. 1.60 Applied to the Metallographic Microscope.—The Efficiency of the Microscope Increased," by F. F. Lucas, Bell Telphone Research Laboratories, New York.

"Study of the Tungsten Carbon System," by W. P. Sykes, General Electric Co., Cleveland.

"Problems of Concentrated Pressure and Some of Its Applications to the Rolling Process," by Dr. A. Nadai, Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa.

"Influence of Nickel and Carbon on the Constitutional Diagram of 18 Per Cent Chromium-Iron Alloys," by V. N. Krivobok, Carnegie Institute of Technology, Pittsburgh, and M. A. Grossmann, Republic Steel Corp., Canton, O.

"Notes on Rustless Steel Fabrication," by J. L. McCloud and Mr. McCarroll, Ford Motor Co., Dearborn, Mich.

"Study of a High Chromium-Low Carbon Steel," by Arthur Phillips, Yale University, New Haven, Conn. and R. W. Baker, Republic Steel Corp., Massillon, O.

"Estimation of Internal Stress in Quenched Hollow Cylinders of Carbon Tool Steel," by O. V. Greene, Carpenter Steel Co., Reading, Pa.

"Relationship Between Welded-On Overlays and Heat Treatment," by M. C. Smith, Stoody Co., Whittier, Calif.

"Copper Brazing in Hydrogen Electric Furnaces," by H. M. Webber, General Electric Co., Schenectady, N. Y.

"Process Reliability in Steelmaking," by G. A. Dornin, Gathmann Engineering Co., Baltimore.

"Preliminary Studies of the Effect of Deoxidation and Mold Conditions on the Tensile Properties of Carbon Steel Castings," by R. L. Dowdell and J. V. McCrae bureau of standards, Washington.

Gun Casting To Be Discussed

"Casting Guns by the Centrifugal Process," by Col. T. C. Dickson, Watertown arsenal, Watertown, Mass.

"Various Peculiarities of Furnace Operation and Specifications Best Suited for Furnace Operation," by H. B. Schultz, Illinois Steel Co., South Chicago, Ill.

"Inclusions Formed on Deoxidation of Steel with Manganese-Silicon Alloys," by C. H. Herty Jr. and G. R. Fitterer, bureau of mines, Pittsburgh.

"Recent Developments in Carburization and Bright Annealing," by J. A. Comstock and W. O. Wozasek, Peoples Gas Light & Coke Co., Chicago.

"Modification of Case Carburizing Processes by Added Ferro-Alloys," by Dr. E. G. Mahin, University of Notre Dame, Notre Dame, Ind.

"Study of the Phase in Metastable Equilibrium in Hyper-euctectoid Iron-Carbon Alloys Between the Eutectoid and Eutectic Temperatures," by A. Allan Bates and David E. Lawson, Case School of Applied Science, Cleveland.

Practical Applications of Alloys Are Discussed

Practical applications of the newly developed heat and corrosion resistant irons and steels and the changes in shop procedure necessary for the best use of the metals were discussed by G. Van Dyke, manager, special steel department, Joseph T. Ryerson & Son Inc., Chicago, at a special meeting of users of steel at Hotel Statler, Cleveland, June 26. The speaker summarized the history of the new developments, and led an informal discussion on the properties of the various alloys, and the procedure to be used in welding, machining, forming, and drawing them. A practical demonstration of the methods developed for welding the metals of the chrome-nickel group was conducted by the Ryerson company at its Cleveland plant preceding the discussion.

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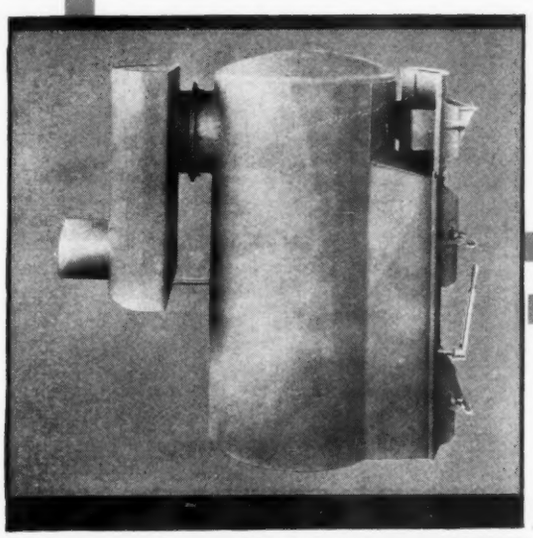

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YOUNGSTOWN

GALVANIZED SHEETS PROTECT .·. SAVE WITH STEEL

Large Steel Roof Deck Is Arc Welded to Purlins

IN CONSTRUCTING the new cold draw building of the Babcock & Wilcox Tube Co., Beaver Falls, Pa., recently, the steel roof deck aws arc welded to purlins, constituting what is believed to be the first instance where this method of attachment has been attempted on large scale. Some 99,700 square feet of copper bearing steel roof deck were employed and, in spite of the fact that adverse weather conditions made the installation difficult, the work was accomplished at a speed which compared favorably with that maintained by the old method of clipping. Costs were well within the average.

Although the fabrication of structural steel frames by arc welding is coming into wider use, it always has been customary to anchor steel roof decks to the purlins by steel clips. The welding of decks to purlins has not been generally adopted because most decks are so constructed that welding must be done from the underside, a slow and expensive process.

Welded from Above

On the Babcock & Wilcox job, the workmen did all of the welding from above and laid 1000 squares of roof deck in 16 working days, with two motor generator sets and 20 men. This speed was made possible by fastening the end of each sheet at the base of the middle two ribs, and the other end being telescoped three inches into the preceding unit. All welds were painted before being covered by the three-inch lap of the succeeding unit. The sheets at the eaves were the only ones where it was necessary to weld both ends.

By welding the center two ribs of each sheet, it was found the roof had sufficient strength to withstand an inside pressure of 85 pounds per square foot while the telescoping end laps supplied adjustability to absorb expansion, contraction or vibration in the frame. The steel decks were covered with ½ inch of insulation and three plies of asbestos waterproofing felts. The roof was erected by the Fenestra Construction Co., Detroit, a subsidiary of the Detroit Steel Products Co. The general contract was held by McClintic-Marshall Co., New York.

All operations connected with the laying of the roof are shown; at the right a unit of roof deck is being telescoped into place; in the center the welder is fasting a unit to the purlins; behind the welder, the painter is covering the welds. (In circle)—The units are held in place by welds at the middle two ribs. The other end of the unit is held by being telescoped into the preceding unit

Research and Promotion Will Aid Castings Industry

(*Concluded from Page* 51)

capture the so-called "fringe markets."

Such a mass educational effort can be done most economically and most quickly through the medium of the trade press. Not only should its purpose be to educate those engineers who are unfamiliar with the possibilities of steel castings, but it should serve as a constant reminder to all designers to have cast steel in mind. By keeping steel castings prominently before the user, they will have due consideration when new parts are being designed.

Among the elemental advantages of cast steel that could be stressed in the co-operative advertising effort are:

First. The elimination of maintenance and "out-of-service" losses resulting from the use of cast steel in place of built-up construction. By showing examples of the replacement of built-up construction with cast steel, the imagination of industry can be stimulated to extend the replacement of such parts. This is particularly true when the castings user is sold the idea that *modern* cast steel is worthy of greater responsibilities and can be safely used for the most vital parts.

Second. That *modern* cast steel can reduce machining costs. Improvements in foundry practice make possible the elimination of much rough machining by observing closer tolerances and giving a smoother finish.

Third. *Modern* cast steel may reduce assembly costs by casting in a single piece a part that was formerly assembled from many different elements.

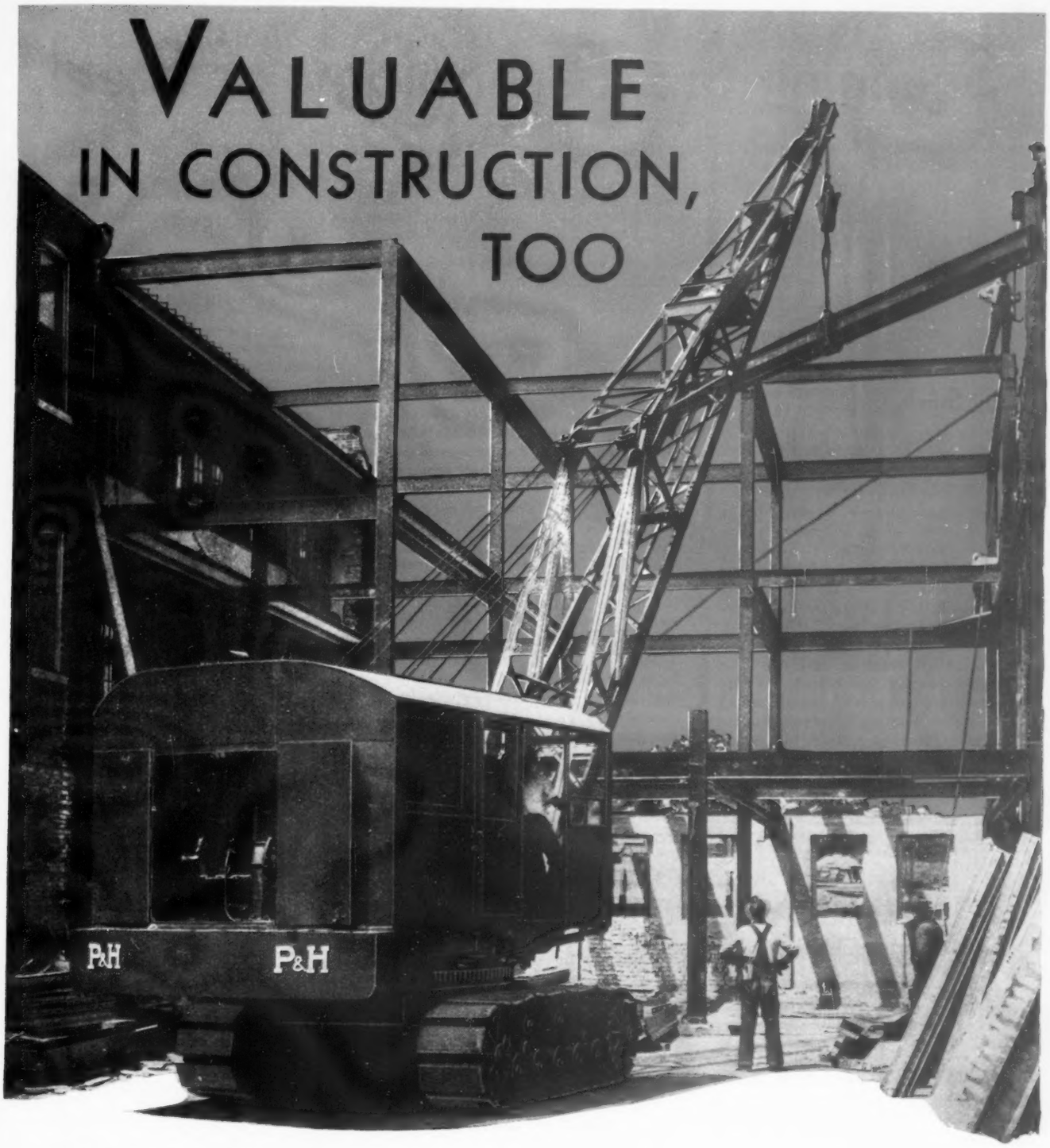
Other fundamental advantages of cast steel can also be stressed that will bring to industry a new appreciation of the economies to be had from *modern* cast steel.

But aside from serving to prod the mind of the castings buyer and to lift the standing of the steel foundry in the eyes of industry a co-operative advertising effort will also focus the attention of all steel castings producers on the activities of the Steel Founders' society. This will rally to the society's support many elements in the industry who may be hanging back to see what the revitalized society will accomplish for the steel foundry industry.

Industrial Press Is Battleground

Every follower of advertising in the industrial press is aware that at the present time the steel foundry industry is being aggressively attacked by interests who would supplant steel castings by other materials. To meet this attack is one of the basic problems of steel founders' collective merchandising. Following the premise that the best defense is always an attack, a merchandising and advertising campaign is suggested that presents in a specific and concrete way the answer of the steel foundry industry to the claims of competing materials.

A real danger exists in letting the steel foundry industry drift along without co-operative and co-ordinated effort to preserve and defend its present market, as well as to enlarge the use for its product. No industry, however powerful, can any longer sit back and wait for business to come to it, for industry competes with industry as well as trade with trade, and established industries find themselves being constantly threatened by new and rising ones.



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Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Alloy Steels

How to identify alloy steels by the use of metal pellets, discussed by Walter G. Hildorf and C. H. McCollam, in Iron Age, p. 1, 4 *pp.,* 1 *table,* 5 *illusts.*

Pellets obtained from various alloys differ widely in shape and texture and color of their surfaces. Those discussed by the authors belong to a group of steels not readily identifiable by the spark test, but accurately segregated by the pellet test. The latter test is not a substitute for the spark test, but is an excellent adjunct. Alloy steels readily identifiable by the spark test are not easily distinguished by the pellet test. Conversely, steels whose identification is doubtful by the spark test can be distinguished by the pellet test.

* * *

Properties developed in the various uses of new manganese alloy steels by E. E. Thum, 22 *pp.,* 3 *illusts,* 8 *tables. A paper presented at the annual meeting of the American Society for Testing Materials in Atlantic City in June.*

Contrary to the report that manganese should be held below 1 per cent to avoid brittleness in steel, the alloy is strong and tough if carbon is reduced proportionately as the manganese is increased. Over 250,000 tons a year of such medium-manganese steels now are used in the United States. In the as-rolled and normalized condition they are used for steel rails, high-strength structural steel, ship and boiler plate, seamless tubing and compressed gas cylinders. In the heat treated condition, medium-manganese steels find usage in shock-resisting castings, high-test welding rods, carburized gears and machine parts, heat-treated forgings and press work, rifle barrels, springs, shear blades and non-deforming gages.

Metal Flow Characteristics

Creep tests made on special iron-chromium alloys and some steels at elevated temperatures, by H. J. French, William Kahlbaum and A. A. Peterson. A paper presented at the semiannual meeting of the American Society of Mechanical Engineers in June, 32 *pp.,* 11 *illusts.,* 41 *charts,* 4 *tables.*

Results of creep tests at different temperatures are given for three groups of alloys. Eleven metals in the first group included commercial alloys of nickel, chromium and iron, both with and without tungsten, and low-chromium steels containing tungsten, vanadium or molybdenum. The second group comprised two carbon steels, a 3½ per cent nickel steel and two low-nickel-chromium steels; the 12 alloys of the third group were melted in a high-frequency induction furnace and their compositions were selected to show the general trends at 1000 degrees Fahr. in the load carrying ability of castings of the nickel-chromium-iron system. A metallographic study of the creep-test specimens revealed intercrystalline weakness in some of the wrought nickel-chromium-iron alloys. A study also was made of the effect of deformation in the creep tests at different temperatures on the hardness and impact resistance of a chromium-vanadium steel at atmospheric temperatures.

Nickel Steels

A discussion of the effect of nickel on the heat treatment and physical properties of steel by V. N. Krivobok, in Black and White, July, p. 9, 3½ *pp.,* 4 *illusts.,* 1 *table.*

Influence of nickel on the mechanical and physical properties and the metallographic characteristics of steel is so pronounced that metals of sufficiently high content of this element have the properties of air-hardening steels. A summary of the various influences exerted by nickel on the mechanical properties is presented in tabular form.

Rail Steels

Research paper, No. 182, *bureau of standards, Washington,* 23 *pp.,* 22 *illusts.,* 3 *tables.*

A series of tests carried out to determine the endurance properties of a heat-treated medium manganese rail, a zirconium-treated medium manganese rail and a manganese molybdenum rail. Some further data also are given on tests of the endurance properties of steel from a transverse fissured and a comparison rail from the same heat which did not fail in service.

Stainless Steel

Methods for obtaining a mirror finish discussed by Jack Pearsall, in Machinery, July, p. 870, 3 *pp.,* 3 *illusts.*

The number of polishing operations necessary to prepare stainless steel for the buffing operation that brings out the final luster depends on the condition of the metal when received from the mill, on the treatment to which it will be subjected in fabrication and on the particular grade of steel used.

FABRICATION:

Acid-Resisting Steel

Methods of fabricating these steels discussed by W. H. Hatfield, in Heat Treating and Forging, June, p. 755, 3½ *pp.,* 1 *table.*

The best method of tank lining is one in which the edges of the sheets are flanged outwards at right angles and the flanges electrically spot welded together. Experience has shown that apart from the difficulty of attaining the necessary temperature, the softeninfi of austenitic nickel-chrome steel articles presents little trouble. Softening demands reasonably quick cooling and the removal of the work from the furnace should be given due consideration. The heat treatment of castings should conform with the heat treatment accorded to other form of the material. Three types of failure, which can be attributed to manipulation during fabrication or to some subsequent treatment, such as to intercrystalline corrosion and stress cracks, are eliminated provided that softening treatment is given previous to service.

Aircraft Welding

An outline of a training course for aircraft welders, by R. W. Boggs and S. C. Clark, in Journal of the American

Welding society, June, p. 62, 15 pp., 17 illusts.

The course is based on the firmly established principles of procedure control. Thirty lessons including separate lectures, demonstrations and shop work, and qualification tests both preliminary and final are included.

Boiler Metal Fractures

An investigation of the mechanism and probable cause of boiler failures, by A. E. White and R. Schneidewind. A paper presented at the semiannual meeting of the American Society of Mechanical Engineers in June, 18½ pp., 63 illusts.

During the past several years many specimens of failed boiler materials were examined by the authors to determine the reason and mechanism for such defects. In some case the pieces consisted of fractured portions of tubes, blowoff pads, saddles, plates, rivets and similar parts. The examinations made by the authors were to a large extent metallographic in nature and have led to some generalizations and classification of cracks and fractures as related to the cause of failure. The paper classifies the types of failure and gives their metallographic characteristics and representative photomicrographs. In general, the material consists of a short review of the literature on boiler metal failures, a detailed description of fractures in boiler metal due to known causes, and a description of actual failures in service.

Chromium Plating

Procedure in preparing surfaces, in Abrasive Industry, June, p. 44, 2½ pp., 3 illusts.

A brief description of a few polishing operations necessary in preparing surfaces of bumpers and radiator shells before plating. The usual procedure is first to copper plate, then nickel plate and finally chromium plate. If the bars are prepared by correct polishing before plating a good finish will result.

Machine Tools

Suggestions for buyers who submit inquiries to machine tool builders for quotations, offered by G. Swahnberg, in Machinery, July, p. 887, 1 illust.

Information often neglected in requesting an estimate on a motor-driven machine is the electrical current characteristics, locating points, production requirements, proper feeds and speeds. A form for recording the information required for quoting on machine tools is presented.

Marking Steel Bars

Review of progress made in development of standard color code for identification of steels, by Arnold J. Copeland. A paper presented at the June meeting of the National Association of Purchasing Agents, 3 pp.

Color marking systems developed by users of steel bars are not uniform and recently attempts have been made to stimulate action in the establishment of a standard color marking code. Obstacles are presented by limited number of colors available, extra expense for producer and hesitancy of consumer to change present code. Individual attitudes of various consumers must be known before further action can be taken to standardize.

Oxyacetylene Welding

Data for estimating costs for construction of oxweld pipe lines or piping systems discussed by D. E. Roberts, in Welding, June, p. 532, 2 pp., 4 illusts., 4 tables.

In view of a diversified list of factors involved in estimating costs and making bids of welded jobs, it is impossible to compare cost figures for arriving at overall costs or bid prices. Basic figures, which can be used in determining total material and labor costs for welding required for a given welded piping system, are presented and are of assistance if used in relation to other factors involved.

PRODUCTION:

Cast Iron Pipe

A method of casting centrifugally discussed by Pat Dwyer, in the Foundry, July 1, p. 98, 4½ pp., 10 illusts.

The plant in which this cast iron pipe is made by the monocast centrifugal process is mechanized and to a large extent automatic. Molten iron is poured into a rapidly revolving, horizontal, sand-lined mold. Centrifugal force throws the molten metal against the sand face of the mold to form a tube of uniform thickness. The sand lining serves as a temporary insulating medium and causes the metal to cool slowly enough to produce a homogeneous gray iron structure in the wall of the pipe.

Coke Testing

Standard method for the shatter test as adopted by the Midland and Scottish Coke Research committee, in Iron and Steel Industry, June, p. 285, 2 illusts.

The essential dimensions of the shatter test apparatus are those given by the American Society for Testing Materials in "Standard Method of Shatter Test for Coke" designated D141-23 in A.S.T.M. Standards, 1927, part II, page 571. Fifty pounds of coke all over 2 inches, shall be placed in the box of the apparatus, the coke leveled, the box raised and the fuel dropped on the plate. The box shall be lowered and all the coke shoveled into it indiscriminately, taking care to avoid breakage. The box shall be elevated and the coke again dropped. When the coke has been dropped four times it shall be screened by hand in such a way that any piece which can pass through the screen in any position shall be counted as undersize and the weights of the coke of each grade shall be determined to the nearest ounce.

At least three tests shall be made and the results states as percentages (given to one decimal place) remaining on 2, 1½, 1 and ½-inch screens. The shatter indices reported shall be the average values of the percentages retained on the 2 and 1½-inch screens, and shall be given to the nearest whole number.

Seamless Tubes

A description of manufacturing methods in Demag News, June, p. 12, 15 pp., 50 illusts.

The Pilger, Swedish, automatic, continuous and push-bench methods are compared in detail. Tubes ranging from 2 to 24 inches diameter and in any length up to 100 feet, can be produced by the Pilger method. A method recently was developed to roll tubes 20 to 24 inches diameter with much thinner walls than the usual practice. Which process should be adopted in a given case depends entirely upon the position of the market.

Steel Pouring Practice

Discussion of Importance, by K. R. Binks, in Metallurgia, June, p. 45, 1½ pp.

Relation of mold length to cross section has a great effect on axial weakness in the ingot and where this ratio is large, the lower portion is apt to be spongy in the center. The size of the mold to be utilized has a distinct influence on the degree of segregation and proportion of piped material. Modern practice now essays to combine the three factors of length, size and thickness of mold walls to produce sound ingots.

Open-Hearth Refractories

A discussion of present applications in Blast Furnace and Steel Plant,

June, p. 999, 2 pp., 1 illust.

Where a vitrified paving brick can be obtained at a reasonable price for mats and retaining walls, the work can be done more economically and better than by using concrete. Insulation for the flues should be selected with care. Stack foundations can be made of either brick or concrete, at the same cost. Checker chambers usually are built of a good grade of firebrick. About 4½ inches of insulating brick should be installed against the steel jacket of the chambers, beneath the floors and over the top of the crowns. Gas and air chambers are being built separately. Other details of construction are included.

Wrought Aluminum

Its application discussed in Machine Design, June, p. 29, 5 pp., 7 illusts., 3 tables.

This metal is worked easily and suited for drawing, extruding, rolling, forging, stamping and spinning. Different mechanical properties are imparted to the alloys by varying the heat treatment, thus making them suitable for such commodities as screw machine parts, street car trucks, bus and railway car bodies, connecting rods, etc. Suggestion for design stresses and factors of safety, stiffness, welding, riveting and the effect of temperature are considered in detail.

MISCELLANEOUS

Depreciation

A review of the general practice of estimating the depreciation of mechanical equipment discussed in Machinery, July, p. 859.

Rates of depreciation based on data obtained from different branches of the mechanical industry are given in per cent of the original cost. They include belting, motors, engines, boilers, pumps, hoists, cranes, machine tools, dies, hammers and patterns.

Electrical Progress

Conspicuous developments which received attention at the convention of the Association of Iron and Steel Electrical Engineers in Buffalo, June 16-20.

Electric drives for rolling mills increased until in 1929 a total of 361,300 horsepower was installed. The total at the close of the year exceeded 2,225,000 horsepower. Arc welding is finding wider application. Direct-current adjustable-speed motors are being used more extensively in continuous mills.

German Machinery

An opinion of the German position in European machinery markets expressed by W. H. Rastall, in American Machinist, July 3, p. 1.

Efforts in Germany have been made in recent years to standardize design details of machinery. These standardized parts now are to be found incorporated in the newer machine tools. A situation is in the making which should be watched carefully by American manufacturers who have enjoyed a substantial export business. A map describing the position of the German machinery industry in the markets of Europe accompanies the text.

Oil and Waste Reclamation

A description of renovating methods in Railway Mechanical Engineer, April, p. 193, 6 pp., 13 illusts.

Waste subjected to centrifugal action for 15 minutes while being sprayed with hot oil is fed into a tumbling machine to remove any large lumps of foreign matter. It then is recharged into an extractor and the cleaning process repeated for 12 minutes. The basket containing the waste is submerged in oil at high temperature for about two hours, returned to the centrifugal extractor where it is rotated slowly for about one minute and is ready for shipment. The process of renovating oil is described in detail.

Intercoastal Trade

A review of trade conditions between the East and West coasts, by E. C. Powers, in Marine Review, p. 24, 10 pp., 14 illusts., 8 tables.

The fact that freight can be moved by water from one coast to the other at just about half the cost by rail resulted in the diversion of large tonnages from the transcontinental railroads to the intercoastal steamship lines. During 1929 twice as many tons of cargo were moved from the West to the East as were moved in the East-to-West trade. Petroleum, lumber and fruit accounted for over half the tonnage moved during the fiscal year of 1928 from the Pacific coast to the Atlantic.

Iron, steel and manufactures constitute the chief commodities moving from the Atlantic to the Pacific in the intercoastal trade. The tonnage for this commodity for the year 1928 was over 1,100,000 tons, practically one-half of the total movement from the east to west coast of the country for that year. The bulk of this tonnage originates at Baltimore. Over 600,000 tons of iron and steel and manufactures was shipped from this port in 1928. Philadelphia was second in importance in this group, shipping almost 300,000 tons, while New York city shipped 130,000 tons. Los Angeles and San Francisco took most of this iron and steel tonnage.

Building of automobile assembly plants on the Pacific coast, and erection of branch factories by two steel corporations have served to lessen the demand for iron and steel shipments in the West.

Shipping Losses

A legal decision discussed by H. B. Skillman, in Marine Review, p. 46.

A carrier's liability for loss of goods is measured by the market value of the lost goods at the port of destination on the date when they should have arrived. The shipper's loss is the difference between what his position would have been, had the contract been performed, and his situation as it is. A stipulation limiting the carrier's liability for the consequences of its own negligence to an agreed valuation of $100 per package is invalid, unless consideration for the limitation is given by offering the shipper a choice of rates between limited and unlimited liability. The same principle equally is applicable to a stipulation which attempts to restrict the shipper's recovery to invoice cost of the lost goods.

Steam Turbines

Economic considerations in their application to power generation, by A. G. Christie, in Electrical World, June 28, p. 1327, 3½ pp., 8 illusts.

Complete data on present American turbogenerator practice are compiled, developments outlined and trends indicated. Especially noteworthy are economic data, a new analysis of reheating and a method for rating turbocasings.

Building Codes Are Amended

The cities of Wilmington, Del., and Columbia, S. C., recently have passed amendments to their building codes which permit the use of the specifications of the American Institute of Steel Construction. The addition of these two cities brings the list of cities using the specifications up to 281. The institute has been advised that the city of Bridgeport, Conn., is considering the adoption of the specifications.

Machine Tools and Shop Equipment

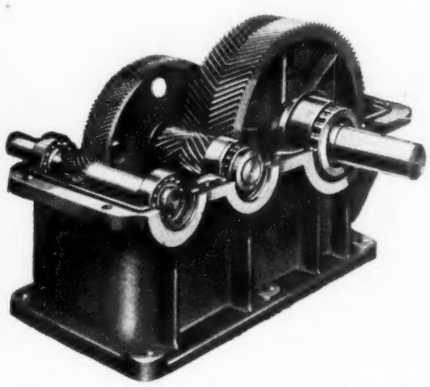
"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Spindle Nose Standards Not Yet Adopted by Tool Builders

BECAUSE considerable publicity has been given to work of the National Machine Tool Builders' association in seeking to bring about standardization of spindle noses of lathes, turret lathes and other machine tools with rotary spindles, an erroneous impression has been created that such standards have been adopted or at least rather definitely determined.

As a matter of fact, this particular standardization project has by no means reached such a definite stage. In a bulletin dated June 7, 1930, Ernest F. DuBrul, general manager of the association, makes the situation clear. He points out that a proposal submitted by one member company, so appealed to certain manufacturers that they have adopted it individually, but without group action and without official indorsement. Several other ideas are now receiving committee consideration and probably will lead to important modifications in the direction of firm holding and quick changing.



Herringbone speed reducer which is made in both single and double reduction units

This statement emphasizes that when machine tool users now ask for machines having "proposed" or "contemplated" standard spindle noses, they should understand that considerable modification of these "proposed" or "contemplated" forms is liable to occur before they become standard in the true sense of the word.

In the meantime, the work in the direction of a real standard spindle nose is being pushed actively. Since the bulletin, was issued the spindle nose committee convening in Detroit during the spring meeting of the American Society of Mechanical Engineers in June, considered further suggestions and appointed a special committee to investigate the new ideas thoroughly.

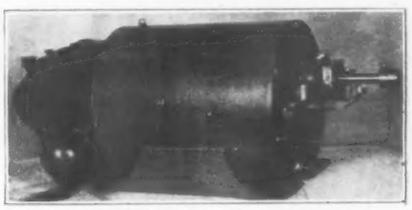
◆

Two Gear Types Available in Line of Speed Reducers

Foote Bros. Gear & Machine Co., Chicago, has placed on the market a line of antifriction speed reducers, in two types, identical in design with the exception that in one case the gears are of the herringbone type, as shown in the accompanying illustration, and in the other, helical type, with slight bearing modifications. Ribs are provided at each bearing for rigidity and the inside upper case is ribbed at the top as an added precaution against longitudinal vibration. No gaskets are used between the halves as accurate machining makes this unnecessary. Oil return grooves are provided for the return of the oil to the bottom of the case. Splash lubrication is standard design.

The reducers are made in both single and double reduction units, the ratios ranging from 2.87:1 to 9.9:1 on the single reduction units and from 9.95:1 to 96.2:1 on the double reduction units. Although the herringbone and helical reducers are designed almost identically alike, certain features can be adopted in the design of the helical reducer that are not practical with the herringbone-type of reducer. These features affect principally the horsepower rating in the selection of the size of reducer and the conservation of space where this is a necessary requirement.

The helical reducers have greater load carrying capacity size for size and weight for weight than the herringbone type. This permits the selection of a smaller unit with smaller gears to be used for a given load and greatly increases the service life of the reducer. This feature is obtained by heat treatment of the gears, a step which is not practical with herringbone gears because of the harmful effects of distortion resulting from the heat treating of two opposed helixes and because the correct load distribution rolling action of the gears is dependent upon the accuracy of the helix angles.

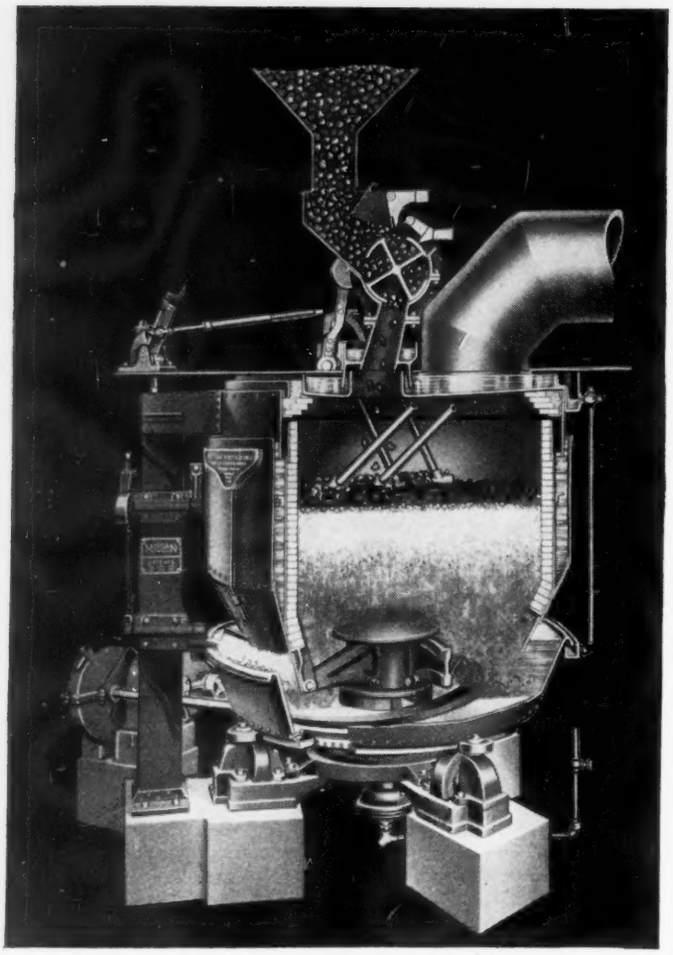


Combination motor and three-speed reduction unit controls automatic welders

Reduction Unit Controls Automatic Welders

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has developed a combined motor and three-speed reduction unit, to drive work handling devices for automatic welding. The requirements of the service are high gear reductions with extremely wide speed ranges and compactness. It is also necessary that provision be made for engagement and disengagement of the drive while the motor is running.

The gear ratios in the three gears of the unit, shown in the accompanying illustration, are 534 to 1, 1295 to 1 and 3060 to 1. With field control on the motor and uninterrupted speed selection, between 0.393 and 6.67 revolutions per minute



This machine is breaking records in production and economy

750 sold
52 sold within past year

With the amount of coal gasified per man greatly increased, the economy of Morgan Producer-Gas machines is well established.

The advances made in the design have given these machines capacity greater than accomplished in continuous service by any other design and with absolutely no increase in labor cost. In actual practice easy working capacity over 6000 lbs. of average quality gas coal per hour. Very poor coal up to 5000 lbs. per hour, without clinkers.

Continuous, uninterrupted service. No reduction in either quality or quantity of gas when the automatic ash removal system is working.

Complete information covering records established by this remarkable machine will be sent upon request.

MORGAN CONSTRUCTION CO., Worcester, Mass., U. S. A.

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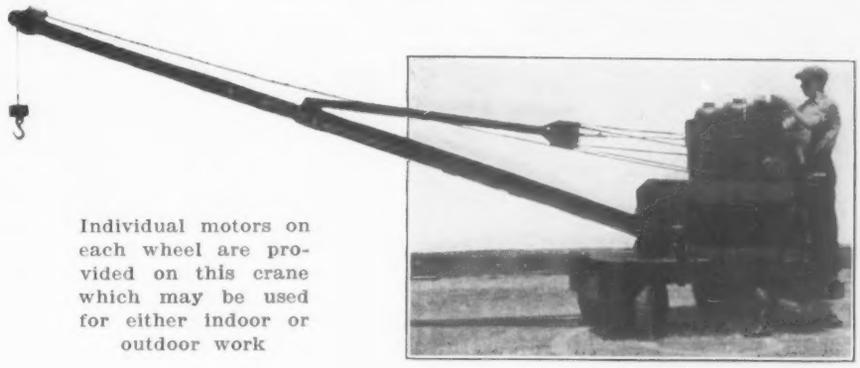
has been obtained in tests. The torque output rating is limited by the strength and wear resistance of the mechanical parts. This is 1500 inch-pounds with hardened gears and 400 inch-pounds with soft gears. A sprocket load of 1200 pounds is permissable on the final shaft.

Three speed notches are provided in the shifting rod, which passes through the hollow output shaft. The shifting lever has an engaging and disengaging position in each of the notches. All gears are of the spur gear type and all bearings are anti-friction. The gear shafts and bearings are mounted in gear frames which can be removed from the housing as two separate units for ease of inspection and replacement.

◆

Heavy Duty Crane Suitable for All Types of Work

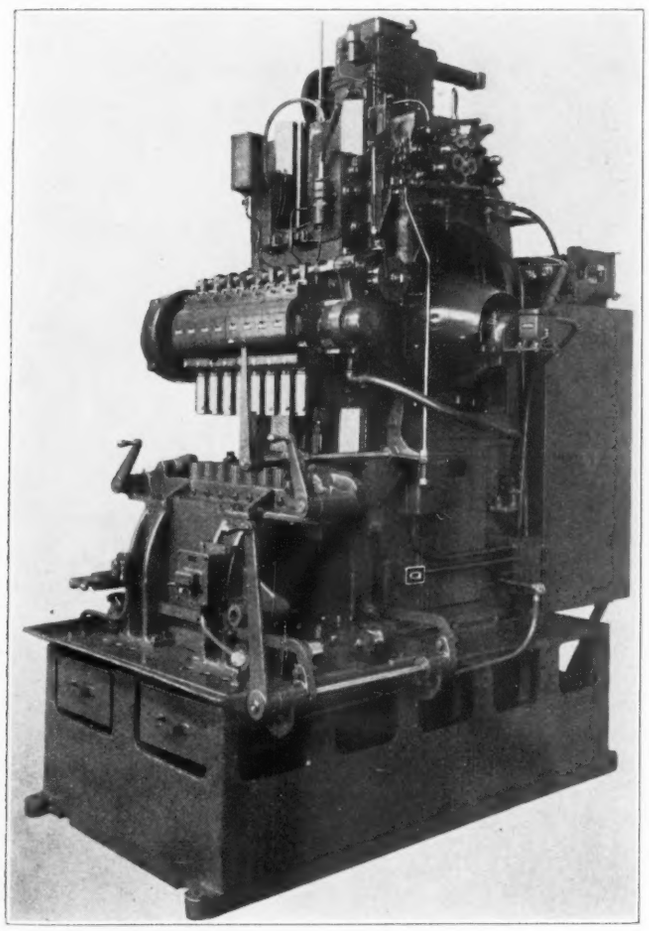
Terminal Engineering Co., New York., has introduced a new type of heavy-duty crane, shown in the accompanying illustration, suitable for indoor or outdoor use. The capacity of this crane is 3650 pounds at a distance of 2 feet from the end of the chassis, or 750 pounds at a distance of 14 feet. The boom is telescopic over a distance of 6 feet. The boom and hook are operated independently from two separately driven hoist units, each with its own motor and controller. The four-wheel drive with no mechanical differentials, but with a motor on each wheel, gives a maximum amount of traction.



Individual motors on each wheel are provided on this crane which may be used for either indoor or outdoor work

In order to give a maximum counterbalancing effect, the machine is so designed as to concentrate as much weight as possible over the wheels away from the load, however, in cases where the load is great enough to throw nearly all the weight on the wheels near the hook, thus reducing the traction on the other wheels, the crane still has motive power because all wheels have individual motors.

The maximum height of lift is 17 feet 6 inches on the standard model, although longer booms may be furnished. The machine can pass through doorways as low as 72 inches when the boom is lowered. Power is supplied to the crane from a storage battery which is large enough to operate an electric magnet, as well as to perform the propelling and hoisting duties. The battery is caried in one unit in a steel container and can be changed easily by the driver using an overhead hoist.



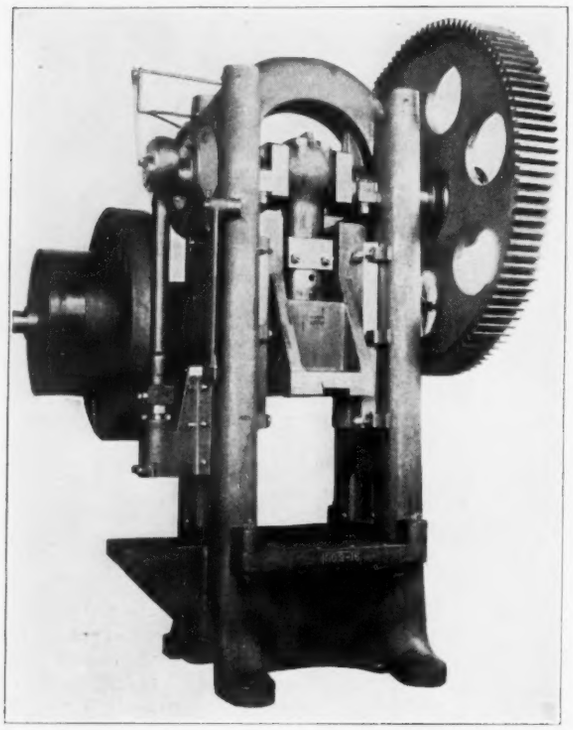
Special type of main drive used for spindles on new hydraulic lapper increases flexibility

◆

Hydraulic Lapper Equipped with Braking Motor

Moline Tool Co., Moline, Ill., has brought out a new hydraulic lapper, shown in the accompanying illustration, which is equipped with an electric braking motor. One of the new features of this machine is the special type of main drive used for the spindles. After the reciprocating rail has completed a predetermined number of strokes, and at the instant it reaches the top of the withdrawal stroke out of the cylinder, a switch is tripped automatically which reverses the main driving motor, causing it to exert a braking action to bring the motor, and consequently the spindles, to a standstill. The instant the motor stops another switch, connected on the end of the motor shaft, automatically shuts off the current, preventing the motor from running in a reverse direction. The hones, in case they are not the type which can be adjusted while the spindles are rotating, can be adjusted for stone wear before beginning the next cycle.

Speed change gears are enclosed in the gear case at the left of the rail



Side shear attachment increases uses of new straight side power press of built-up tie rod construction

to transmit the power from the intermediate shaft from the motor to the long spiral. The spiral in turn drives the spindles through spiral gears. The reciprocation is stopped automatically when the rail reaches the top of the withdrawal stroke, but by means of a hand lever located on top of the jig, the reciprocation can be stopped at any time. To facilitate moving the cylinder block in and out of the holding fixture, rollers are provided which are so arranged that by raising a lever at the right-hand end of the jig the rollers raise the cylinder block up and off of the hardened steel rest pads and clear of the locating pins. The cylinder block then rides on rollers. Kerosene for the hones is supplied by a centrifugal pump located in the left side of the column and driven by the main drive motor.

◆

Straight Side Power Press Has Shear Attachment

Zeh & Hahnemann Co., Newark, N. J., has added a new size to its line of straight-side power presses of built-up tie rod construction. This large press, shown in the accompanying illustration, is built with a side shear attachment, and has central lubrication. The large driving gear wheel is located close to the frame of the press so that no outboard bearing is required. This in turn gives free access to the jaw clutch. It can be inspected or dismantled without interfering with any other parts. The brake can be adjusted from the stand of the operator.

The press is constructed to exert a normal pressure of 250 tons. It is tested, however, at 375 tons. The press, constructed with single back gearing as shown, weighs 37,000 pounds and operates at 30 strokes per minute. The distance between the uprights is 30 inches while the standard stroke is 6 inches.

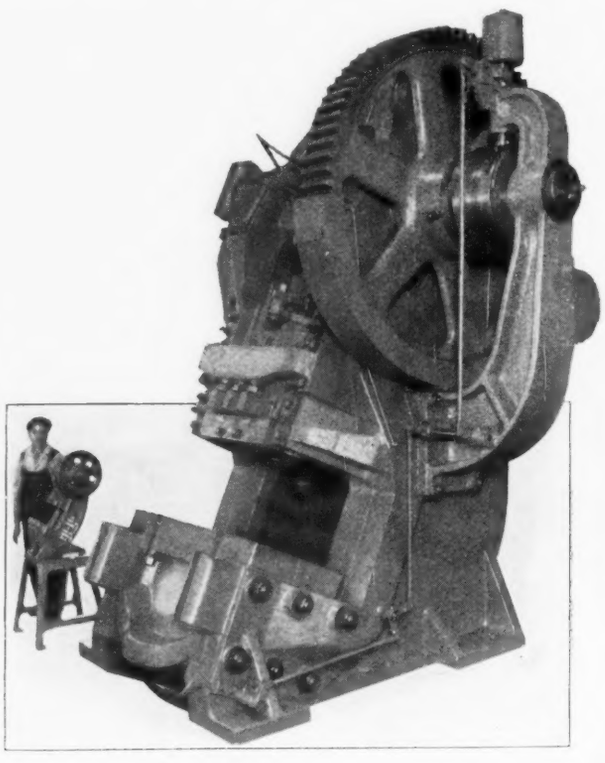
◆

Inclined Open Back Press Is Unusually Large

Toledo Machine & Tool Co., Toledo, O., has designed an unusually large inclined open-back press, said to be one of the largest of its type ever built. The accompanying illustration shows the portion of the press which sets above the floor contrasted with a similar portion of the smallest size press built by the company.

The following figures give an indication of the proportions of this press: Weight 115,000 pounds; area of bed, front to back by left to right, 36 by 60 inches; area of slide face, 30 by 31 inches; width of opening in back, 36 inches; die space, the distance from the top of the bolster plate to the underface of the slide with the stroke down and adjustment up, 18 inches. The crankshaft is of the full eccentric type, 10 inches in diameter at the frame bearing and 18 inches in diameter at the connection bearing, giving a 6-inch stroke to the slide. The press is fitted with a three-bar knockout for the slide and a centralized lubrication system for the main bearings.

Power is supplied by a 25-horsepower direct-geared motor through



Unusual size features inclined open-back press which is fitted with a three-bar knockout for the slide

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. . . "by any other name" as Shakespeare might have said, "a bolt made by Russell, Burdsall & Ward would still be a perfect bolt."

But the name Empire on the label is your assurance that you are getting that perfect bolt.

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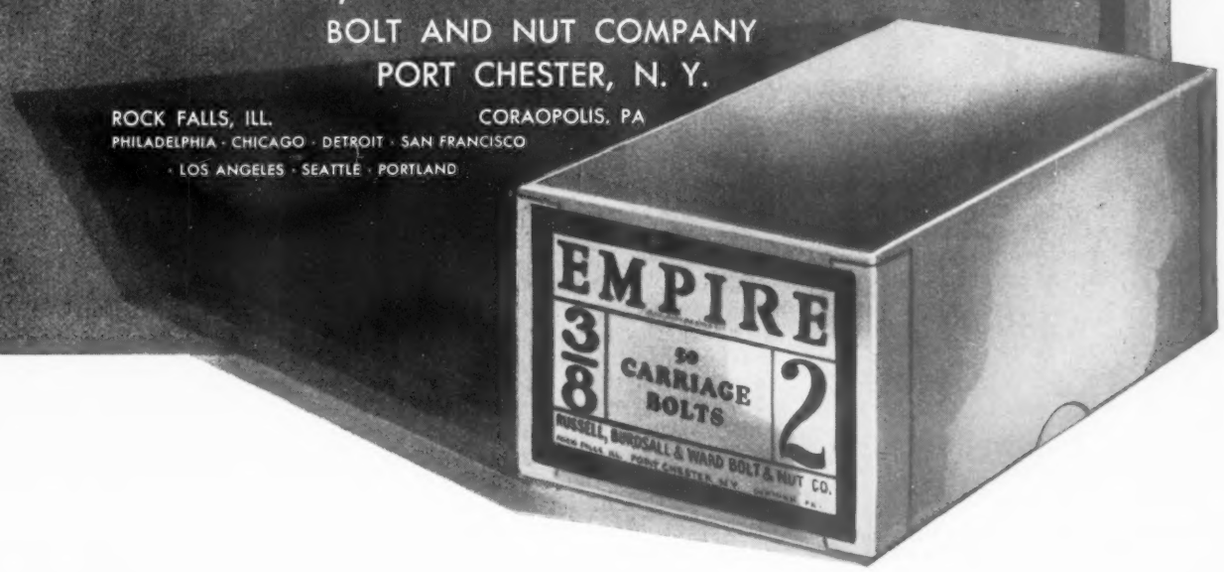


a chain of steel gears in the ratio of 24 to 1, making 15 strokes per minute. A jaw clutch operated by a foot treadle controls the movement.

◆

Vertical Coolant Pump Uses No Packing

Tomkins-Johnson Co., Jackson, Mich., has designed a vertical coolant pump which is especially adaptable for centerless grinders or coolant purposes. This centrifugal pump, shown in the accompanying illustration, uses no packings. There is no bottom or pan under the impeller to collect grit or chips. The driveshaft, impeller and protector tube are one unit, revolving together. With the intake at top, coolant is never forced upward between housing and protector tube and never comes in contact with the bearings which are within 1 inch of the impeller designed to be entirely self aligning.

The pump handles a heavy mixture of coolant with grit or chips, as efficiently as it does clean oil. It is furnished with or without motor or with driving pulley, and can be supplied in acid-resisting metal construction. The pump may be obtained with a capacity of 50 gallons per minute and a maximum lift of 15 feet, or with a capacity of 15 gallons per minute and a maximum lift of 10 feet.

Coolant pump is especially adapted for centerless grinders

New bucket provides added digging leverage

◆

Automatic Unit Countersinks Square and Hexagon Nuts

Kent Machine Co., Cuyahoga Falls, O., recently has brought out a machine for countersinking both ends of the hole in square or hexagon nuts. The machine, shown in the accompanying illustration, is fully automatic in its action. Nuts coming directly from the bar machines, when placed in the hopper, are delivered automatically to the feeding chutes from which they are fed to a position in line with the countersinking spindles. Both ends of the hole in the nut are countersunk simultaneously to the same depth, after which the nut is ejected automatically from the machine and passes over a grid for the removal of the chips.

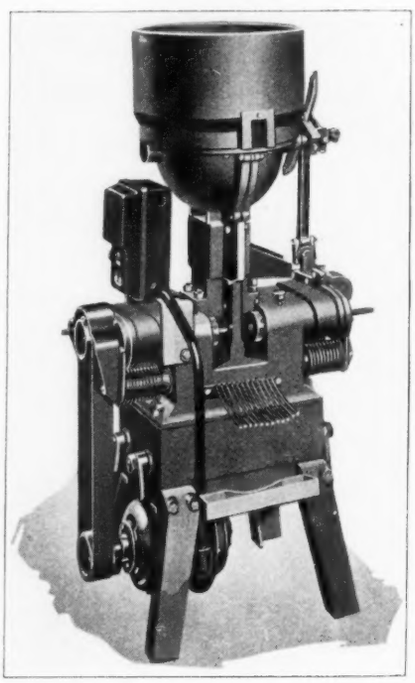
The hopper is designed with galleys or feeding chutes leading from the hopper to a set of countersinking spindles on each side of the machine, and is really a hopper with double feed. It is adjustable for different sizes of nuts and interchangeable feeding chutes are employed to meet the varied requirements of diameter and height of product. The drive is from a motor located underneath the machine by belt to the driving shaft. One cam shaft controls the entire cycle of operations. The countersinking tools are inserted quickly and easily, set as occasion may demand, and run for a long period of time at each setting due to the small amount of service they are called upon to perform.

◆

Improvements Lend Higher Digging Power to Bucket

G. H. Williams Co., Erie, Pa., has developed a new clamshell bucket which has a narrow head and heavy digging lip and which is more rugged than previous models. The new head construction which combines the use of cast steel and rolled steel parts, has provided greater rigidity and strength to take twisting strains of hard digging and also provides a broader and more solid bearing surface for the return sheave pin.

Added digging leverage is given the new bucket, shown in the accompanying illustration, by cast-steel brackets which extend well beyond the backs of the scoops. This also gives a "wobble-proof" connection between scoops and the A-frame superstructure. The scoops are all-welded, perfectly smooth inside, with no obstructions to catch the material. The one-piece full-width main hinge keeps the scoops in alignment, and with this type of hinge construction there is practically no wear on the hinge pin. The power arm principle, which combines the lever and block-and-tackle without "side lead" of closing cable, is used for rapid closing and opening.



Both ends of the hole in square or hexagon nut are countersunk on this unit

Holiday Break Gives Mild Impetus

Steel Markets, However, Continue to Drift—June Ingot Rate Lowest of Year—Lake Ore Mines Curtailing—Pig Iron Prices Unsteady—Plates Are Active

A SLIGHT accumulation of orders gives mild impetus this week to those steel finishing mills which shut down entirely last week; otherwise, the steel market situation continues to drift.

Forecasts that demand, production and prices all are scraping bottom are numerous, but they emanate chiefly outside the industry. Producers themselves look for a slight rebound in the early fall, but until the railroads and the automotive industry again become vigorous consumers, with concurrent activity in affected lines, there is no substantial basis for noteworthy improvement. Prices continue irregular, although on the whole offering more resistance. On bars, plates and shapes, thought stabilized on the basis of 1.70c, Pittsburgh, the market appears to be working down $1 per ton, to the lowest level since 1922. Wire products are under pressure. Pig iron in the Mahoning valley is more sensitive to recent reductions in contiguous territory. Basic iron is down 50 cents at Philadelphia.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (July 9, 1930)	$33.32
Last week (July 2, 1930)	33.34
One month ago (June, 1930)	33.53
Three months ago (April, 1930)	34.44
One year ago (July, 1929)	36.71
Ten years ago (July, 1920)	68.29

Not encouraging to production are the sharp curtailment in Lake Superior iron ore mining operations and the drastic blowing-out of blast furnaces in June. Final statistics reveal 19 stacks—15 steelworks and four merchant—dropped last month, leaving only 161 out of 312 stacks in blast.

Steelmaking operations, while little changed, still are out of balance due to the July 4 holiday. Cleveland mills are at 41 per cent this week, compared with 30 last. Chicago holds at 65, while Pittsburgh is off a few points to 60-65 per cent. Youngstown mills, at 60 per cent, are up 10 points from last week.

Steel ingot production in June, at a daily rate of 137,610 tons, slumped to the lowest level this year, as did pig iron at a daily rate of 97,760 tons. First half year production of ingots—23,793,119 tons—was 18 per cent below the record 29,037,398 tons of 1929, and 2.5 per cent under the 24,798,077 tons of 1928. Steelmaking operations thus far in 1930 have averaged 76.6 per cent, contrasted with 95.5 per cent a year ago.

In most finished steel lines modest peaks protrude in the week's business, but the total is not distinctive. Except for automotive consumers, buying of sheets is slightly improved at Pittsburgh. Road building has given bar makers at Chicago the best tonnage in a number of weeks. Plates are more active, the Gulf Refining Corp. requiring 9500 tons for tank work, while at Chicago 12,000 to 15,000 tons of tank work is pending and the A. O. Smith Corp., Milwaukee, will be taking 50,000 tons this month and about 45,000 tons in August.

Freight car awards in June, at 998, were the lowest this year, even undercutting the 1392 of May. First half awards, revised, stand at 32,604 units, compared with 62,816 in 1929 and 28,334 in 1928. Gulf Refining Corp. has ordered 150 tank cars. Most rail mills are extending until late fall the options on rails given to most carriers with their 1930 orders.

Structural steel awards, topped by 7500 tons for a bridge at Seattle and 4200 tons for a civic stadium at Cleveland, totaled 27,885 tons, close to the average of weekly lettings thus far in the year. For 1930 to date structural awards aggregate 951,713 tons; a year ago, 1,183,966 tons.

Raw and semifinished materials, like finished steel products, are in small demand. Pig iron consumers are running so close to their requirements that interplant borrowing is frequent. Several merchant blast furnaces are scheduled to be blown out shortly.

STEEL'S composite market average, continuing that established by its predecessor, Iron Trade Review, is off 2 cents this week, due to weakness in pig iron, to $33.32.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 9, 1930	June, 1930	April, 1930	July, 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	20.76
Basic, valley	18.50	18.50	18.50	18.50
Basic, eastern del. eastern Pa.	18.25	18.75	18.76	19.85
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.76
No. 2 foundry, Chicago	18.00	18.40	19.40	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.40
**No. 2X, Virginia Furnace	18.25	18.25	18.25	20.00
**No. 2X, Eastern del. Phila.	20.26	20.26	20.76	22.26
Malleable, valley	19.00	19.00	19.00	19.00
Malleable, Chicago	18.00	18.40	19.40	20.00
Lake Superior, charcoal, del. Chi.	27.04	24.04	27.04	27.04
Gray forge, del. Pittsburgh	19.13	19.13	19.13	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.50	2.50	2.60	2.75
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.25	33.00	35.00
Sheet bars, open-hearth, Pitts.	31.00	31.25	33.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.25	33.00	35.00
Wire rods, Pittsburgh	36.00	36.00	38.00	42.00

	July 9, 1930	June, 1930	April, 1930	July, 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.70	1.75	1.80	1.95
Steel bars, Chicago	1.80	1.85	1.90	2.05
Steel bars, Philadelphia	2.04	2.04	2.12	2.27
Iron bars, Chicago	1.90	1.90	1.95	2.05
Shapes, Pittsburgh	1.70	1.70	1.80	1.95
Shapes, Philadelphia	1.76½	1.77	1.81	2.06
Shapes, Chicago	1.80	1.80	1.90	2.05
Tank plates, Pittsburgh	1.70	1.70	1.80	1.95
Tank plates, Philadelphia	1.85½	1.91	1.95	2.15
Tank plates, Chicago	1.80	1.80	1.90	2.05
Sheets, blue anl., No. 13, Pitts.	2.15	2.15	2.25	2.20
Sheets, black, No. 24, Pitts.	2.55	2.55	2.65	2.85
Sheets, gal., No. 24, Pittsburgh	3.15	3.20	3.30	3 60
Sheets, black, No. 24, Chicago	2.70	2.70	2.80	3.10
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.40	2.50
Sheets, galvanized, No. 24, Chi.	3.35	3.35	3.45	3.85
Plain wire, Pittsburgh	2.30	2.30	2.40	2.50
Wire nails, Pittsburgh	2.10	2.15	2.25	2.65
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.35
SCRAP				
Heavy melting steel, Pittsburgh	15.00	15.10	16.05	18.45
Heavy melting steel, eastern Pa.	12.50	13.25	13.95	16.50
Heavy melting steel, Chicago	12.00	12.05	13.00	14.75
No. 1 wrought, eastern Pa.	15.25	15.25	15.75	16.25
No. 1 wrought, Chicago	11.25	11.50	13.30	14.85
Rails for rolling, Chicago	14.50	14.55	15.00	17.50

Sheets

Slight Improvement Noted in Some Districts Following Holiday Lull—Prices Are Steady

SHEET PRICES, PAGE 77

Pittsburgh—Sheet contracting is more active, with buyers showing more interest than for a number of weeks. Producers take this as an indication that prices are at their lowest level, although no marked improvement in business is looked for over the next six weeks. Current buying continues in small lots, with automotive tonnage still declining. Operations do not exceed 50 per cent. Prices generally are unchanged with occasional departures noted from usual quotations of 2.55c for black sheets, 3.15c and 3.20c for galvanized, 2.00c and 2.15c for blue annealed, and 2.80c to 2.90c for tin mill black.

New York—While galvanized sheet prices are unchanged at 3.10c, base, Pittsburgh, to jobbers, to the manufacturing trade they now are 3.15c, a decline of $1 a ton. Black sheets are easier at 2.45c to 2.55c, with jobbers and larger consumers obtaining the minimum. Blue annealed plates and sheets are 2.00c and 2.15c, respectively.

Philadelphia—Sheet demand continues to shrink, but some good size orders were placed in the past week for the radio and oil industries. Prices are unchanged, with blue annealed 2.00c and 2.15c, base, Pittsburgh, for the heavy and light gages, respectively. Black sheets are 2.55c, and galvanized 3.10c to 3.15c, subject to differentials.

Youngstown, O.—A few more independent sheet mills are running, an increase from 30 per cent last week to 40 per cent. These figures measure the slight gain in sheet sales. Steel furniture builders have placed some contracts. Stocks in all consumers' hands appear exceedingly low. Demand for common black and galvanized sheets is coming from makers of spiral pipe, stampers, roofers and miscellaneous consumers. Makers of special grade of sheets in the western and northern portion of the district continue to do fairly well. Most makers of common black ask 2.55c, Pittsburgh, but some sellers name 2.45c in competitive districts. Galvanized are generally 3.20c, with some sales at 3.15c and 3.10c. Autobody sheets hold at 3.60c, and blue annealed at 2.00c to 2.10c.

Cleveland—Sheet producers are experiencing the dullest period so far this year. An order for Ford running board stock went to a maker of wide strip steel. Mullins Body Corp., Salem, O., booked a $2,000,000 body order for a model to come out this fall, and will negotiate for the steel soon. Autobody sheets are 3.60c, Pittsburgh. Metal furniture builders have been shipping from stock for some time and now are beginning to buy sheets. This grade is 3.70c. While some mills hold black sheets at 2.55c, others are willing to sell at 2.45c. Galvanized sheets are selling in small lots at 3.15c.

Chicago—Sheet orders accumulated over the holiday and operations have risen to 80 per cent for the district as against less than 50 per cent a week ago. Implement and tractor works are expected to order material for September and October, to make parts for next year. Mills are naming flat prices for No. 13 and No. 10 blue annealed sheets at 2.25c and 2.10c, respectively.

Cincinnati—Sheet mills report little interest in forward requirements, consumers asking prompt shipments on immediate needs. New business is keeping production schedules at about 40 to 50 per cent.

Birmingham, Ala.—Sheet mills of Tennessee Coal, Iron & Railroad Co. are operating at more than 70 per cent. Progress is being made on additions, to be completed early next year. New sheet mills of the Gulf States Steel Co., at Gadsden, Ala., will operate this month.

St. Louis—Current sheet demand is about equal to the average of the past three or four weeks. Moderate improvement is noted in sales of galvanized sheets.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.45c to 2.55c
Detroit, delivered	2.76½c to 2.81½c
Philadelphia, delivered	2.84c
Gary, Indiana Harbor	2.65c
Chicago, delivered	2.70c
Birmingham, base	2.70c to 2.75c
St. Louis, del.	2.97c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.80c to 2.90c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.15c
Philadelphia, delivered	3.44c
Gary, Indiana Harbor	3.30c
Chicago, delivered	3.35c
Birmingham, base	3.40c
St. Louis, del.	3.62c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base*	1.95c to 2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.57c
Philadelphia, delivered	2.44c
Birmingham	2.35c

*Minimum price is for cont. mill.

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base*	1.80c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.29c
St. Louis, delivered	2.42c
Birmingham	2.20c

*Minimum price is for cont. mill.

AUTOMOBILE NO. 20

Pittsburgh, base	3.60c
Detroit, delivered	3.86½c

FURNITURE NO. 24

Pittsburgh	3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	3.65c to 3.75c

*Price subject to quantity differentials.

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$2.10-2.15 and 2.25
Cement coated nails	2.15 and 2.25
Galvanized nails	4.15 and 4.25

(Per pound)

Polished staples	2.60c and 2.70c
Galvanized staples	2.85c and 2.95c
Barbed wire, gal.	2.80c and 2.90c
Annealed fence wire	2.30c and 2.40c
Galvanized wire	2.75c and 2.85c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 per ton over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.65c to 1.70c
Philadelphia, del.	1.85½c
New York, del.	1.93c
Boston, del.	2.05c
Chicago, base	1.80c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.85c to 1.90c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f.	2.25c
St. Louis, del.	2.12c
Detroit, del.	1.91½c to 1.96½c

Structural Shapes

Pittsburgh, base	1.65c to 1.70c
Philadelphia, del.	1.71½c to 1.76½c
New York, del.	1.85½c to 2.03½c
Boston, del.	1.98½c to 2.08½c
Chicago, base	1.80c
Cleveland, delivered	1.83¼c to 1.88½c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.85c to 1.90c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	1.91½c to 1.96½c

Bars

SOFT STEEL

Pittsburgh, base	1.70c to 1.75c
Chicago, base	1.80c
Birmingham, base	1.85c to 1.90c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.70c to 1.75c
Cleveland, del, outside mills	1.77½c to 1.82½c
Philadelphia, del.	1.99c to 2.04c
New York, delivered	1.98c to 2.08c
Boston, delivered	2.05c to 2.15c
Detroit, del.	1.95c to 1.98½c
Pittsburgh, cold finish	1.90c
Pittsburgh, forg. qual.	2.00c

RAIL, STEEL

Chicago Heights	1.75c
Eastern mills	1.65c to 1.70c

IRON

Chicago, base	1.90c
New York, delivered	1.98c to 2.03c
Philadelphia, delivered	1.99c to 2.04c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet cut lengths	2.00c
Stock lengths, mill	1.75c
Chi. billet, over 500 tons	1.85c
30 to 500 tons	2.00c
Under 30 tons	2.45c
Chicago, rail steel	1.65c to 1.70c
Road and bridge work	1.65c to 1.70c
Philadelphia, cut lengths	2.14c

Cold-Finished Steel

Bars, drawn or rolled, Pitts., Chi., Buff.	2.10c
Cleveland	2.00c to 2.10c
Do. delivered, Detroit	2.20c
Shafting (turned, polished) Pitts., Buffalo	2.10c
Shafting (turned, ground) mill	2.45c to 2.90c

(Depending on size, 1 3/16 to 7-inch)

Cut Nails

Carloads, f.o.b. mills	2.45c to 2.55c
Less-c.l., f.o.b. mills	2.55c to 2.65c

Chain

PROOF BB AND BBB, Pittsburgh

3/16 to ½-inch	33 1/3 and 5 off
9/16 to 1½-inch	33 1/3 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chr. spring.	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome, Ni., Van.	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rds., squrs.)	0.50	3.15

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets 35c; plates 31c; bars 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.75c to 1.80c
Delivered, Detroit	2.01½c
Hot strip 6 1/16 to 24-in., Pitts.	1.65c to 1.70c
Delivered, Detroit	1.91½c
Hot strip, bands 6 in. and under, Chicago	1.90c
Do. 6 1/16 to 24 in.	1.80c
Cooperage stocks, Pitts.	2.00c to 2.10c
Do. Chicago	2.10c to 2.20c
Cold rolled strip., Pitts., Cleve., 3 tons and over.	2.45c
Delivered, Detroit	2.65c
Worcester, Mass., (3 tons and over)	2.60c to 2.70c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes, boat and barge, Pittsburgh	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

Sheet Piling

Base, Pittsburgh	2.00c to 2.10c

Bars

Eastern Markets Find 1.65c, Pittsburgh, Being Quoted—Chicago Mills Have Heavy Week

BAR PRICES, PAGE 77

Chicago—Deformed bar orders, seasonably heavier than for several years, feature the bar market. A fair volume of quarterly contracts has been closed, contributing to one of the heaviest finished steel sales weeks since March. Activity in concrete bars is due to road work, industrial and public works building. Road machinery and excavating equipment builders are carried along by the road programs. With funds now available to complete the Illinois waterway project, dredging and excavating equipment builders see encouraging prospects. Buyers exert persistent pressure against 1.80c, Chicago, base for bars, plates and shapes, largely as the result of recent reports of 1.65c to 1.70c, Pittsburgh.

New York—The local steel bar market has eased to a spread of 1.65c to 1.75c, Pittsburgh. Most tonnage is moving at 1.70c to 1.75c, but 1.65c is noted in an increasing number of instances, where the tonnage is proving especially attractive. Third quarter contracts previously written at 1.75c are being revised to meet the new scale of prices. While many regard the market as now being a dead rock bottom, orders continue to come through slowly. Shipments range two to three weeks. Common iron bars also are lower at 1.65c to 1.70c, Pittsburgh.

Philadelphia—Steel bars have eased further and the general market now is 1.65c to 1.70c, Pittsburgh, subject to occasional differentials to large tonnage users. Demand has declined further.

Pittsburgh—Steel bar tonnage continues light with orders involving only small tonnages. Producers continue to quote 1.75c, Pittsburgh, as the general market with 1.70c usually the minimum on more desirable tonnages. The market is afforded few tests on attractive lots.

Youngstown, O.—Steel bars here appear to be weakening and there is more evidence that 1.65c, Pittsburgh, is being done in large lots. However, important bar makers here continue to ask and take tonnage at 1.75c.

Cleveland—Stocks of bar users all are low but such large capacity is available at all times, buyers do not worry and show no inclination to anticipate. They wait until they book their orders before they place their steel orders. Some outside mills quote 1.75c, Pittsburgh. Local mills quote 1.70c to 1.75c, Cleveland, pending upon destination. Automotive consumption of steel bars is further curtailed this month but a pickup is expected in August.

Iron Ore Demand Quiet; Mine Operations Slow Up

Iron Ore Prices, Page 88

Cleveland—Mine operations in the Lake Superior district are slowing up as new demand for ore is not developing as anticipated earlier in the season. There are no inquiries in the market and no additional business is in sight before fall. The estimated given in STEEL last week of the vessel shipments in June was not far from the actual figure, 8,650,441 tons. The total this year to July 1 is 15,737,573 tons, a decrease of 6,502,365 tons. or 29.2 per cent, from last year. Following are the shipments from the various ports to July 1 this year:

	To July 1 1929	To July 1 1930
ESCANABA		
C. & N. W.	1,562,552	1,017,420
C. M. & St. P.	580,699	286,146
MARQUETTE:		
D. S. S. & A.	277,108	157,151
L. S. & I.	1,350,886	842,614
ASHLAND		
C. & N. W.	1,845,075	1,174,746
SOO LINE	952,874	467,099
SUPERIOR:		
GREAT NOR.	5,737,777	4,262,944
SOO LINE	444,985	366,282
NOR. PAC.	245,282	242,204
DULUTH:		
D. M. & N.	6,945,315	4,624,534
TWO HARBORS:		
D. & I. R.	2,297,385	2,296,433
TOTAL	22,239,938	15,737,573
1930 Decrease		6,502,365

Plates

Small Tonnages Rule—Tank Requirements Increase at Pittsburgh—Pipe Needs Still Heavy

PLATE PRICES, PAGE 77

Chicago—Estimates are that 40,000 to 50,000 tons of plates will be shipped to the Milwaukee welded pipe fabricator in July, and about 45,000 tons in August on projects carried over. Storage tank inquiry totals 12,000 to 15,000 tons. Plates sold in the past week for oil tank fabrication total less than 1000 tons. Specifications from the freight car shops have virtually ceased. Plate mill operations are maintained at 80 to 85 per cent. Buyers are exerting pressure for lower prices, but mills are quoting 1.80c as the nominal price.

New York—Plate buying is light, although considerable business appears in early prospect. Demand is featured by the placing of 250 tank cars for the Gulf Refining Co., requiring a substantial plate tonnage. Miscellaneous fabricated work is the smallest in two months. The price is unchanged at 1.75c, base, Coatesville, Pa.

Philadelphia—Plate demand has declined further and eastern mills now are operating at 50 to 75 per cent. The usual price is 1.75c, base, Coatesville, Pa., subject to differentials to structural fabricators and certain other classes of consumers. The Norfolk & Western railroad is inquiring for 5000 tons of plates, shapes, bars, axles and wheels for 500 box cars to be built in its own shops, Roanoke, Va. The general ton of the plate market is easy.

Pittsburgh—Tank work for oil companies is more active, 9500 tons being required for refinery and bulk station work for the Gulf Oil Corp. of Pennsylvania at Pittsburgh, Staten Island, N. Y., and Baltimore. Recent awards for barge work total 1800 tons. Miscellaneous requirements are quiet. Large tonnages are bringing concessions but the general market continues 1.70c, Pittsburgh. Lower prices are quoted in competition with eastern mills.

Cleveland—Plate orders are scarcer. The local plate mill occasionally obtains 500 to 1000 tons but the volume of new business is smaller than at any time so far this year. The 1.70c, Pittsburgh, price appears to be easier and 1.65c, Pittsburgh, has been named here by outside mills. Dished and flanged heads for stills and tanks create a fairly large aggregate plate tonnage for certain producers in the course of a month.

Contracts Placed

9500 tons, tank work at Pittsburgh, Staten Island, N. Y., and Baltimore for Gulf Oil Corp. of Pennsylvania.

to McClintic-Marshall Co., Pittsburgh.
2200 tons, siphon, irrigation project, Vale, Oreg., to Western Pipe & Steel Co., San Francisco.
950 tons, two derrick boats, New York Central railroad, to Dravo Contracting Co., Pittsburgh.
900 tons, six barges, Eastern Asphalt Co., Philadelphia, to Dravo Contracting Co., Pittsburgh.

Contracts Pending

1500 tons, water supply system, 20 miles of 24-inch main, for Anacortes, Wash.; bonds voted and plans by W. C. Morse Co., Seattle, engineers, completed.
1200 tons, sheet piling, sewer system, Louisville, Ky., general contract to Pittsburgh Foundation Co., Pittsburgh. Contract also calls for 5000 tons of concrete bars.
137 tons, sheet piling, United States engineers, Sacramento, Calif.; bids July 8.

Crude magnesite mined in the United States in 1929 totaled 187,660 short tons, valued at $1,500,000, an increase in volume of 47 per cent over 1928, states the federal bureau of mines.

Bolt and Nut Prices

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, and apply to lists of May 10, 1930.

CARRIAGE BOLTS

All sizes, cut thread .....73 off
Rolled thread ¾ x 6 and smaller take 10 per cent lower list.
Eagle list .....73 off

MACHINE BOLTS

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts .....60, 10 and 10 off
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ¾ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished .....73 off

***HEXAGON CAP SCREWS**

Milled .....80-10-5 off
Upset 1 in. diam. and smaller 85-10 off

***SQUARE HEAD SET SCREWS**

Milled .....85-5 off
Upset 1 in. diam. and smaller .....80-10-5 off

*Discounts dated Jan. 23, 1930.

Rivets

Struc. c.l., Pitts.-Cleve. 2.90c
Structural, c.l., Chicago 3.00c
**7/16-inch and smaller, Pitts. .....70, 10 and 5 off
Chi., Cleve. .....70 to 70,10 and 5 off
**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Wrought Washers

Carloads, Pitts. dist.....$6.50 to $6.75 off
Carloads, Chicago dist..... 6.70 to 6.80 off
Less carloads, Chi. dist.... 6.50 to 6.75 off

Railroads

Car Inquiry Lighter—Gulf Refining Buys 250—Rail Orders Are Deferred

TRACK MATERIAL PRICES, PAGE 77

New York—Complete returns place domestic freight car awards for June at 998, the smallest monthly total so far this year. It compares with 1392 in May and brings the total for the first half up to 32,604, which in turn compares with 62,816 in the corresponding period of 1929. Further comparisons follow:

	1930	1929	1928	1927
*Jan.	5,072	13,196	4,160	14,710
*Feb.	17,027	15,944	10,220	5,960
*March	6,118	12,023	2,958	4,955
*April	1,997	8,205	6,043	3,675
*May	1,392	7,562	2,531	5,425
June	998	5,886	2,422	7,440
Total 6 mos.	32,604	62,816	28,334	42,165
July		341	582	2,295
Aug.		2,854	677	1,181
Sept.		4,517	1,378	682
Oct.		19,506	2,853	886
Nov.		6,361	6,140	1,189
Dec.		9,710	4,799	14,897
Total		106,105	44,763	63,295

*Revised.

Fresh demand continues exceedingly light, with orders scattered and inquiry virtually absent. One inquiry is out for 20 locomotives for China.

Pennsylvania railroad opens bids July 9 on boiler tubes and July 15 on steel pipe and axles. New York Central opens bids July 16 on steel wheels.

Pittsburgh — Specifications for track material are slow with a slight decrease noted since a month ago. New inquiry continues light. Pennsylvania railroad's list for angle bars and tie plates is still pending.

Cleveland—It now appears certain that the railroads will be able to extend their options on additional rail tonnage 90 days to Oct. 1. No new inquiries are in sight and fresh new orders have been lacking.

Chicago—While a few miscellaneous rail orders have been placed, no important rail tonnage is expected for at least 60 days, when it is possible that several of the roads normally placing secondary business may order. Secondary buying is expected to be unusually light this year. Rail mill operations are down to about 50 per cent in the Chicago district.

Adoption by Chicago voters in a referendum July 1 of the Chicago traction ordinance, which provides for 3-line tracks on elevated railroads, and extensions of surface lines covering several hundred miles over a 10-year period, presages attractive developments. Under this ordinance probably 2000 new cars will be ordered by elevated and surface lines. Freight car shops in the Chicago district have completed their specifications against the Chesapeake & Ohio cars being built.

Birmingham, Ala.—Reduction of employed forces is inevitable at the Bessemer, Ala., shop of Pullman Car & Mfg. Corp., since the end of freight car orders approaches. No new business is expected in the near future. Tennessee Coal, Iron & Railroad Co.'s rail mill continues idle with no expectation of resuming before August.

Car Orders Placed

American Agricultural Chemical Co., New York, three 70-ton tank cars, to General American Tank Car Corp., Chicago.
Chicago & North Western, 10 70-ton flat cars, to American Car & Foundry Co., New York.
Electro Metallurgical Co., one 50-ton steel hopper car, to American Car & Foundry Co., New York.
Gulf Refining Co., 250 tank cars, 125 to General American Tank Car Corp., Chicago, and 125 to Petroleum Iron Works Co., Sharon, Pa.
Western Electric Co., 10 100-ton flat cars to the Koppel Industrial Car & Equipment Co., Pittsburgh.

Car Orders Pending

Rio Grande do Sul, Brazil, 39 30-ton coal cars; Dr. Octacilio Pereira, Porto Alegre, Brazil, is general manager.

Locomotive Orders Pending

Peiping-Mukden, Tientsin, China, 20 locomotives.

Bolt, Nut, Rivet Tonnage Is Smaller; Prices Steady

Pittsburgh—Specifications for bolts, nuts and rivets are slow with tonnage smaller than a month ago. Structural shops continue fair buyers but railroad specifications are light. Third quarter contracting is practically complete, with prices at 73 off for bolts and nuts and 2.90c, Pittsburgh, for large rivets.

Chicago—Producers of bolts, nuts and rivets are down for inventory. Specifications are light. No changes are reported in the discounts of 73 off for bolts and nuts. Small rivets are quoted 70 to 70, 10 and 5 off.

Structural Shapes

7500-ton Seattle Bridge, 4200-ton Cleveland Stadium Awarded—Contracting Somewhat Slower—Fresh Inquiry Aggregate Also Shows Decline

STRUCTURAL SHAPE PRICES, PAGE 77

New York—Structural steel lettings are lower this week. Bids are in on three commercial building projects which require close to 10,000 tons. Awards are due in a few days. Keen competition continues to weaken prices. Buyers take full advantage of this situation, driving sharp bargains with fabricators. Under 1.855c is reported on plain shapes, delivered New York. Bethlehem Fabricators Inc. booked 1500 tons for a telephone building at Hartford, Conn. The New York Central will close on third quarter requirements late this week. No fixed tonnage is specified. Pennsylvania railroad took bids July 9 on structural steel requirements. Volume involved in pending engineering projects is heavy. New inquiry includes 4000 tons for an office building on John street New York.

New York Structural Steel Board of Trade reports June orders totaled 49,943 tons against 58,431 tons in May. This is exclusive of engineering projects such as bridges, piers, subways, etc.

Boston—All structural developments last week were small. Palmer Steel Co. was awarded 100 tons for a county court house at Ellsworth, Me., and 500 tons for the Brown building, Waterbury, Conn. A medical library, Boston, 200 tons, and three Connecticut bridges, 300 tons, are pending.

Philadelphia—Structural shape demand is quieter. Eastern mills reflect somewhat lower operating rates. Prices on plain material continue 1.65c to 1.70c, base, nearest mill, subject to differentials on particularly attractive business. Part of the 5000 tons of steel sought by Norfolk & Western railroad for building 500 box cars is structural shapes.

Pittsburgh—Bridge work let in this district involves 3850 tons of shapes. With this exception the local market is quiet and although inquiry is fairly active few large lots are included. The market on plain material usually is 1.70c, Pittsburgh, with only attractive lots going at less.

Buffalo—Structural demand has tapered off materially. Reduced operations of shape mills account for a large part of the drop in open-hearth schedules here. Bids are being taken this week for a $250,000 steel bridge at Eighteen Mile creek near here. Not much other new business is in early prospect.

Cleveland—Contract for structural steel, 4200 tons, for the civic stadium here has been informally awarded American Bridge Co. on its bid of $55.20 per ton. A separate contract for erection was placed with Bass Construction Co. at $17.40 a ton. Bids for the steel ran consistently close, four other bidders being McClintic-Marshall Co., $55.60; Hiner Structural Steel Co., $56; Massillon Bridge & Structural Co., $57; and Fort Pitt Bridge Works, $60.40. Bids now are asked on superstructure of the Central-Lorain bridge, 12,000 to 15,000 tons, to close Aug. 2. Plain material is 1.65c to 1.70c, Pittsburgh. Contracts like 35 tons for a galvanizing and chrome plating building for Westinghouse Electric & Mfg. Co., Cleveland, and a 15-ton building for Cleveland Union Terminal Co. are fairly frequent.

Chicago—Residential and commercial building in the Chicago district is held back in part by the lack of market for real estate bonds and the inability of mortgage bond houses to undertake financing. Much of this is due to the pyramided effects of several years of speculative building. Approval given by Chicago voters to the traction ordinance indicates prospects of 225,000 to 500,000 tons of structural and other steel for the extension of surface and elevated trackage, new cars and probable subway construction. The proposed extensions will cover a period of ten years. Current inquiries are light and specifications average only with June. The price for plain material is nominal at 1.80c, Chicago.

Birmingham, Ala.—Practically all structural business received last week was in lots below 100 tons each. The aggregate was sufficient to warrant fairly steady operations. One of the larger shops reports a 5-day weekly schedule.

Awards Compared

	Tons
Awards this week	27,885
Awards last week	22,740
Awards two weeks ago	41,304
Awards this week in 1929	30,619
Av. weekly awards, 1930	33,990
Av. weekly awards, 1929	42,213
Av. weekly awards, June	31,479
Tot. awards to date, 1929	1,183,966
Tot. awards to date, 1930	951,713

Contracts Placed

7500 tons, state bridge, Aurora avenue, Seattle, to United States Steel Products Co., San Francisco.

4200 tons, civic stadium, lake front, Cleveland, informally awarded to American Bridge Co; Osborn Engineering Co., Cleveland, engineer; erection contract to Bass Construction Co.

2350 tons, viaduct, Monessen & Southwestern Railway Co., Speer's Run, Pa., to American Bridge Co.

1500 tons, St. Agnes hospital, Philadelphia, to American Steel Engineering Co., Philadelphia.

1500 tons, Youghiogheny river viaduct, Pittsburgh & West Virginia railroad, to American Bridge Co.

1500 tons, telephone building, Southern New England Telephone Co., Hartford, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.

1200 tons, bridge work at Safe Harbor, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

1000 tons, building, Minnesota Power & Light Co., Duluth, to National Iron Co., West Duluth, Minn.

1000 tons, building, Cincinnati Union Terminal Co., Cincinnati, to Mt. Vernon Bridge Co., Mt. Vernon, O.

500 tons, post office, Lowell, Mass., to a western fabricator.

500 tons, Brown building, Waterbury, Conn., to Palmer Steel Co., Springfield, Mass.

500 tons, mail building for Chicago & Western Indiana railroad, at Chicago, to McClintic-Marshall Co.

500 tons, plant No. 2, General Motors Truck Corp., Pontiac, Mich., to R. C. Mahon Co., Detroit, through J. A. Utley & Sons Co., Detroit, general contractor.

425 tons, 4-story factory building, Boerum street, Brooklyn, N. Y., to Pecker Iron Works, Brooklyn, N. Y.; Murray Klein, Brooklyn, architect.

400 tons, freight house, Baltimore & Ohio railroad, Cincinnati, to American Bridge Co.

375 tons, building, J. A. Laporte Corp., Albany, N. Y., to Eastern Bridge & Structural Co., Worcester, Mass.

357 tons, auxiliary steam power plant, Tacoma, Wash., to Lidgerwood Pacific Co., Tacoma.

335 tons, building, American Central Life Insurance Co., Indianapolis, to Central States Bridge & Structural Co., Indianapolis.

300 tons, loft building, West Forty-second street, New York, to Easton Structural Steel Co., Easton, Pa.

228 tons, highway bridge, Rogers, Tex., to Alamo Iron Works, San Antonio, Tex., through Thomas & Radcliffe, Rogers, Tex., general contractors.

225 tons, transit shed, Long Beach, Calif., to Pacific Iron & Steel Co., Los Angeles.

200 tons, Kip Bay Boys' club, New York, to Dreier Iron Works, New York.

170 tons, theater, Berlin, Vt., to Porcupine Boiler Co., Bridgeport, Conn.
160 tons, school of geography, Harvard university, Cambridge, Mass., to unstated fabricator.
150 tons, theater, Salina, Kans., to St. Joseph Structural Steel Co., St. Joseph, Mo.
150 tons, elevated railroad repair work, Interborough Rapid Transit, New York, to American Bridge Co.
125 tons, highway bridge, New Jersey, to Bethlehem Steel Co., Bethlehem, Pa.
125 tons, theater alterations, Broadway and Fifty-third street, New York, to Harris Structural Steel Co., New York.
110 tons, bridge, Reading railroad, Ashland, Pa., to Bethlehem Steel Co., Bethlehem, Pa.
100 tons, bridge, Boston & Albany railroads, Brookfield, Mass., to Watts Construction Co.
100 tons, county court house, Ellsworth, Me., to Palmer Steel Co., Springfield, Mass.
100 tons, bridge, Pennsylvania railroad, Radnor, Pa., to Belmont Iron Works, Philadelphia.

Contracts Pending

4000 tons, office building, John street, New York.
2600 tons, travel and transportation building, Chicago World's Fair, Chicago.
2000 tons, approaches, Wabash avenue bridge, Chicago.
1500 tons, lock gates, United Electric Light & Power Co., Bagnelle, Mo.
1300 tons, headquarters building, Cleveland board of education; general contract to Hunkin-Conkey Construction Co.; Wheeling Structural Steel Co., Wheeling, W. Va., low bidder on steel.
1000 tons, additional unit, Brooklyn hospital, Brooklyn, N. Y.
1000 tons, bridge work, Illinois Highway commission, Chicago; bids June 9.
840 tons, Wisconsin-Minnesota interstate bridge, Stillwater, Minn.; bids close July 22 with Minnesota state highway department, St. Paul.
700 tons, Kentucky and Indiana railroad underpass at Louisville, Ky., general contract to George Bickel, Louisville.
500 tons, plant addition, Fisher Body Corp., Tarrytown, N. Y.; bids in.
500 tons, post office and federal court building, Richmond, Va.
450 tons, garage, East Sixty-fourth street, New York.
400 tons, state highway bridge, Pennsylvania.
300 tons, three state bridges, Connecticut.
300 tons, isolation hospital, Brooklyn, N. Y.
200 tons, medical library, Boston.
200 tons, bridge, Baltimore & Ohio railroad, Chicago.
200 tons, machine shop and storage plant, Merrimac Chemical Co., Everett, Mass.
134 tons, contract building, Merrimac Chemical Co., Everett, Mass.
129 tons, biological building, Harvard university, Cambridge, Mass.
Unstated tonnage, one 120-foot high steel truss span in Waupaca county, Wisconsin; Chicago Construction Co., Chicago, low bidder at $17,409.
Unstated tonnage, federal building, Worcester, Mass., to cost $1,000,000; general contract awarded Murch Bros., St. Louis.

Concrete Bars

1500 Tons Let for Seattle Bridge — Louisville, Ky., Lets General on 5000-ton Sewer—Other Awards, Inquiries Smaller but Fairly Numerous—Prices Hold

REINFORCING BAR PRICES, PAGE 77

New York—Concrete reinforcing bar prices continue easy on attractive tonnages. Small orders are fairly numerous and firm at 2.55c, New York. Considerable work is up but buyers are inclined to hold up awards. Pier F, Jersey City, N. J., for Pennsylvania railroad was awarded Igoe Bros. A 255-ton New Jersey highway job still pends and several New York subway sections remain to be placed. Highway work upstate calls for considerable reinforcing steel, including mesh.

Boston—Concrete bar interests had another quiet week. Small lettings aggregated about 150 tons. Prospects are somewhat brighter, with owners talking more earnestly about projects which have been held up. The 2000-ton post office job here and one or two other fairly large items are pending.

Pittsburgh—Reinforcing bar tonnage holds at a good seasonal rate, comparing favorably with activity a month ago. Local work runs mostly to small individual lots, awards and inquiries for less than 100 tons at a time being fairly prominent. The market on carload lots is 1.75c for stock lengths and 2.00c for cut lengths.

Buffalo—A fair volume of reinforcing bar business is developed through small lot sales. Large tonnages are few. Road builders are buying carloads of welded mesh in increasing numbers and a fair amount of tonnage is covered in this manner. Competition is keen.

Chicago—Record reinforcing bar shipments are being made despite unimportant residential and commercial building. A number of 500-ton projects are pending, in addition to road work in several states. Measured by building permits, Chicago construction for the first six months this year approximated only one-third of 1929 first half. Prices for reinforcing bars are fairly steady.

Cincinnati—General contract for a sewer system at Louisville, Ky., involving 5000 tons of concrete bars and 1200 tons of sheet piling, went to the Foundation Co., Pittsburgh.

Birmingham, Ala.—Fairly active production reinforcing concrete bars is noted. Connors Steel Co. is operating double turn in some departments, concrete bars being in heavy demand and a start now being made on cotton ties and bands.

Awards Compared

	Tons
Awards this week	**6,543**
Awards last week	**4,753**
Awards two weeks ago	**6,162**
Awards this week in 1929	**3,927**
Average weekly awards, 1929	**5,849**
Average weekly awards, 1930	**7,035**
Average weekly awards, June	**7,338**
Total awards to date, 1929	**179,659**
Total awards to date, 1930	**196,977**

Contracts Placed

1000 tons, approaches, Aurora avenue bridge, Seattle, to Pacific Coast Steel Corp., Seattle.
700 tons, Lane Technical high school, Chicago, to Inland Steel Co., Chicago.
600 tons, piling for Central-Lorain Lorain bridge, Cleveland, to Bourne-Fuller division, Cleveland, of Republic Steel Corp., Youngstown, O.
500 tons, superstructure, Aurora avenue bridge, Seattle, to United States Steel Products Co., San Francisco.
500 tons, grain elevator additions, Chicago, Milwaukee, St. Paul & Pacific railroad, Milwaukee, to American System of Reinforcing, Chicago.
450 tons, officers' headquarters, Randolph Field, San Antonio, Tex., to Alamo Iron Works, San Antonio, through Kenneth Colburn Inc., San Antonio, general contractor.
400 tons, bridge work for Illinois Highway commission, Chicago, to several fabricators.
350 tons, pier F, Pennsylvania railroad, Jersey City, N. J., to Igoe Bros.; J. Rich Steers Inc., general contractor.
315 tons, paving, San Diego county, California, to unstated interest.
300 tons, boiler house unit, New York hospital, New York, to Carroll McCreery Co. Inc., New York; Marc Eidlitz & Son, general contractors.
255 tons, highway route 6, section 1C and 2, Bergen county, New Jersey, to Kalman Steel Co., Chicago.
200 tons, Illinois road work, to Inland Steel Co., Chicago.
200 tons, highway bridge, Jersey City, N. J., to Concrete Steel Co.; Raymond Concrete Pile Co., general contractor.
200 tons, dormitories, Institute of Technology, Pasadena, Calif., to Soule Steel Co., Los Angeles.
200 tons, bank building, Hollywood boulevard and Vine street, Los Angeles, to unstated interest.
170 tons, overhead crossing in Tehama and Shasta counties, California, to unstated interest.
103 tons, sewer system, Reno, Nev., to

unstated interest.
100 tons, theater, 488 West Sixth street, San Pedro, Calif., to Blue Diamond Co., Los Angeles.

Contracts Pending

5000 tons, sewer system, Louisville, Ky., general contract to Foundation Co., Pittsburgh. Contract also calls for 1200 tons of steel piling.
800 tons, subway, route 108, section 8, Queens, N. Y.; general contract bids in.
438 tons, paving work, San Mateo county, California, bids opened.
300 tons, store, 610 South Hill street, Los Angeles; bids being received.
182 tons, bridge, Siskiyou county, California; bids received.
150 tons, apartment, Ninth and Kingsley drive, Los Angeles; bids being received.
134 tons, bridge, Siskiyou county, California, bids received.
100 tons, power station, 2904 West Eleventh street; bids being received.
100 tons apartment, San Marino and Serrano avenues, Los Angeles; bids being taken.

Cold Finished Bars Lag With Price Easy

Cold Finished Prices, Page 77

Pittsburgh—Cold-finished bar producers continue to name 2.10c as the general market despite reports of a $2 a ton reduction. The market still is quiet, with restricted automotive operations reflected in current business. Requirements of other consuming industries are seasonally light.

Cleveland—Miscellaneous consuming industries keep calling for small amounts of cold-finished steel bars, including power plant machinery builders. For automotive purposes, however, demand continues slow. The price still is 2.10c, Cleveland.

Steel Joist Standard Up

Manufacturers of steel joists will meet at Cleveland, Hotel Hollenden, July 15, 2 p.m., to consider accepting as a simplified practice recommendation a table of sizes and loads for steel joists formulated by the Steel Joist institute. The division of simplified practice, department of commerce, Washington, will conduct the meeting.

Concentrates its Plants

American Welding & Mfg. Co., Warren, O., has sold to the U. S. Gypsum Co., Chicago, its plant No. 2, at Warren, and will concentrate its operations in plant No. 1. Equipment and materials will be transferred at once to the active plant.

Strip

Slack Demand General But Some Increase Shows Occasionally—Prices Are Steady

STRIP PRICES, PAGE 77

Pittsburgh—Poor demand continues in strip steel. Automotive tonnage shows little further decline but with present and prospective shutdowns this business is at a low ebb. Operations are lower, with hot strip output at 40 to 50 per cent and cold strip at 25 to 30 per cent. Prices are unchanged, with wide strip quoted 1.65c to 1.70c and narrow 1.75c to 1.80c. Cold strip generally is 2.45c.

New York—Although 1.65c, Pittsburgh, appears more general, the market on wide hot strip continues at 1.65c to 1.70c, Pittsburgh, with narrow holding at 1.75c to 1.80c, Pittsburgh. Cold-rolled strip is unchanged at 2.45c, Pittsburgh. Buying remains light.

Philadelphia—Hot strip steel continues easy at 1.60c to 1.70c, Pittsburgh, for wide and 1.70c to 1.80c, Pittsburgh, for narrow. Cold strip is quoted at 2.45c and some tonnage has been placed at this figure. Stripsheet continues 1.80c and 1.95c, Pittsburgh on heavy and light gages, plus blue annealed extras.

Cleveland—A few good sized orders for 24-inch wide hot strip were occasioned by the placing of large orders with Geometric Stamping Co., and Murray Ohio Body Co., Cleveland, for Ford rubber insulated running boards. This tonnage was divided among two or three continuous mills in West Virginia and Ohio. Otherwise narrow and wide hot strip and cold strip are quiet. The former is quoted 1.65c and 1.70c, Pittsburgh, while cold still is 2.45c, Cleveland. Orders for miscellaneous purposes are expected to increase this month.

Chicago—A spurt is shown in specifications for hot-rolled strip, but operations are unchanged at about 50 per cent. Attractive tonnages of wider material bring 1.75c, Chicago. Reports here are that cold-rolled mills find prices a little steadier.

Semifinished Contracts Slow; Output Reduced

Semifinished Prices, Page 88

Pittsburgh—Third quarter contracting for semifinished steel has been duller than usual and spot buying continues light. Makers of strip and sheets have been buying moderately. Prices are unchanged, with rerolling billets, sheet bars and slabs usually $31. Rerolling billets in instances are commanding $37, with some tonnage going at $36. Wire rods are quieter but steady at $36.

Youngstown, O.—The number of independent open hearths operating this week has dropped to 26 out of a district total of 53, giving an operating rate of about 49 per cent. Carnegie Steel Co. is operating at 55 per cent. Bessemer steel operations are at a bout 60 per cent. Billets, sheet bars and slabs continue $31, Pittsburgh and Youngstown.

Chicago—Shipments of semifinished steel have dropped sharply from the peak of second quarter. The nominal price of billets, blooms and slabs is $32, base. Wire rods remain $37, Chicago.

Cleveland—Specifications for sheet bars, billets and slabs show a further decline and the leading merchant producer here started Tuesday with only four of its 14 open hearths active, a loss of one since last week. A few contracts with regular customers have been booked for third quarter at the unchanged price of $31, Cleveland and Youngstown, for sheet bars, billets and slabs.

Tin Plate Less Active; Output at 75 Per Cent

Tin Plate Prices, Page 77

Pittsburgh—Tin plate business is quiet with incoming tonnage and shipments less active than a month ago. Some releases have been received against orders placed recently but operations remain at slightly below the usual seasonal level. The current rate is around 75 per cent. The price continues $5.25 per base box.

Youngstown—A fair demand continues to come to tin plate mills from canmakers. The leading producer, contrary to usual custom, has not yet named prices for the last half. Contracts from canmaking customers are being renewed for the last half by independent tin plate makers at $5.25, Pittsburgh, per base box.

Officers for the year 1930-31 recently elected by the Buffalo, N. Y., chapter of the American Society for Steel

Treating are as follows: Chairman, H. J. Cutler, engineer of tests, Bethlehem Steel Co.; vice chairman, J. H. Birdsong, metallurgist, Pratt & Letchworth Co.; secretary, Charles F. Wahl, assistant metallurgist, Pratt & Letchworth Co.; and treasurer, J. R. Eves, Falls Electric Furnace Corp.

Man Made Abrasives Better Than Nature's Product

Man makes better abrasives than nature, is the conclusion from statistics issued by the United States bureau of mines, department of commerce. In 1929 138,973 short tons of natural abrasives were produced in the United States, valued at $2,857,000.

Artificial abrasives produced and sold the same year totaled 126,712 short tons and valued at $10,821,696, relatively on equal tonnage, between three and four times as valuable.

Figures are as follows:

Natural abrasives	Short tons	Value
Emery	923	$10,722
Garnet	5,961	435,420
Grinding pebbles and tube-mill lining	4,630	66,178
Grindstones	21,071	617,618
Milestones, chasers and dragstones	.....	31,407
Oilstones, whetstones, hones, scythestones, and rubbing stones	838	212,017
Pulpstones	6,665	623,928
Pumice	60,873	318,579
Tripoli	38,011	545,658
Totals	138,973	$2,857,000
Artificial abrasives:		
Carbides	30,309	$3,060,401
Aluminum oxides	72,614	6,471,373
Metallic abrasives	23,789	1,289,922
Totals	126,712	$10,821,696

Donner Gets Die Rolling

Republic Steel Corp., Youngstown, O., claims substantial economy in its die-rolling operations through concentration of capacity at the Donner plant at Buffalo. Removal of die-rolling from the Witherow plant at Pittsburgh has been completed. Consolidation of the two plants not only effects economies in overhead, it is claimed, but also eliminates freight and handling charges on billets and cuts down scrap losses 5 per cent through ability to handle larger billets.

Homes heated by oil burners now number 535,000, compared with 12,500 in 1921. If the present rate of increase is maintained, 665,000 domestic oil burners will be in use in 1931.

Pipe

Two Cast Orders Total 1650 Tons—Southboro, Mass., Wants 1500 Tons—Steel Pipe Quiet

PIPE PRICES, PAGE 101

Pittsburgh—Pipe is quiet in new business, continuing active in execution of old orders. Local mills are unable to book additional business in large sizes of lapwelded or seamless pipe for early delivery although this depends to a certain extent upon how rapidly new producing facilities are placed in active operation. Some slight improvement is noted in buttweld pipe although this product still is in light seasonal demand. Oil country goods remain slow while activity in other tubular products is only fair. Mill operations continue 75 per cent.

Boston—While published municipal lettings of cast pipe last week were few, several such awards were made privately. Some additional private business likewise was closed. Gloucester, Mass., will close this week on $100,000 worth of pipe in various sizes. Putnam, Conn., is expected to award 600 tons, and New Haven, Conn., 300 tons.

New York—Cast pipe prices are firm and unchanged at $37, eastern foundry. Activity largely is centered in buying and inquiry for New York boroughs. Two contracts, 1650 tons, were placed and two more, 1000 tons, for Manhattan are pending. Westchester county is in the market for 4100 feet of 14 and 16-inch pipe. A fairly large tonnage is expected for Bedford Hills, N. Y., shortly. Volume is not heavy, although small shipments are numerous.

Buffalo—Additional large oil fields have been discovered recently in western New York. If lease holders develop them on contemplated scales large pipe tonnages will be purchased before the end of the season. Demand for pipe from the oil regions near here continues large in spite of curtailment of operations to stabilize prices.

Cleveland—Demand for standard full weight merchant pipe from jobbers still is confined to spot needs. Occasional single carloads are noted. National Refining Co. wants 1200 feet of 13-inch lapweld steel pipe and 2300 feet of 8⅝-inch seamless. Between 50 and 150 tons each are involved in the tubular requirements of the civic stadium, Severance hall, and the headquarters building for the board of education, all at Cleveland.

Chicago—Advertised work in cast pressure pipe again has declined. Customary light tonnage is expected for the first half of July. Saginaw, Mich., awarded 130 tons of 6, 16 and 24-inch pipe. Chicago board of public works is expected in the market soon for another tonnage. Carload prices are fairly strong on the basis of $45.20 to $46.20, delivered Chicago. It is reported attractive municipal work might develop lower quotations.

Birmingham, Ala.—Production of cast pipe continues five days weekly. The price base remains firm at $37 to $38 on 6-inch and larger. Lettings are far from active and orders being worked off steadily. Only a few specifications are in sight. Shipments are steady, the bulk of tonnage moving to the distant west.

Contracts Placed

900 tons, 12 to 30-inch cast pipe for Bronx, N. Y., to Warren Foundry & Pipe Co.; Melrose Construction Co., general contractor.

750 tons, 12 to 24-inch cast pipe for Richmond, N. Y.; to unstated foundry.

657 tons, 6 and 8-inch class B, improvement of Manchester street, Los Angeles, to Griffith Co.

350 tons, cement-lined cast pipe, Providence, R. I., to United States Pipe & Foundry Co., East Burlington, N. J.

150 tons, cast pipe, Lynn, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

130 tons, 6, 16 and 24-inch cast pipe for Saginaw, Mich., awarded through contractor.

125 tons, 6 and 8-inch monocast pipe, improvements at Yakima and Puget Sound Navy Yard, Washington and Eugene, Oreg., to American Cast Iron Pipe Co., Birmingham, Ala.

115 tons, 10 to 12-inch cast pipe, Lowell, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

100 tons, 12-inch cast pipe, Reading, Mass., to United States Pipe & Foundry Co., East Burlington, N. J.

Unstated tonnage, 20,000 feet, 6-inch cast pipe for Minneapolis, to American Cast Iron Pipe Co., Birmingham, Ala.

Unstated tonnage, municipal improvement, Great Falls, Mont., to James B. Clow & Sons, Chicago.

Unstated tonnage, 4650 feet of 6 and 8-inch cast pipe, Great Falls, Mont., to Pacific States Cast Iron Pipe Co., Provo, Utah.

Steel Pipe Orders

Unstated tonnage, 19,000 lineal feet 42 inch 100-foot head pipe for line under Wisconsin river to serve branch plant of Nekoosa-Edward Paper Co., Port Edwards, Wis., to Lock Joint Pipe Co., Ampere, N. J.

Contracts Pending

4100 feet, 14 to 16-inch cast pipe for Westchester county, New York; bids July 14.

1500 tons, 6 to 20-inch cast pipe, South-

In these oil-fired furnaces
GREFCO
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Excellent Results
IN changing over their boiler furnaces from coal-fired to oil-fired, this prominent western manufacturer imposed a severe strain on the refractory materials used in the restricted fire box.
GREFCO Chrome High Temperature Cement was used for laying up the G. R. Brick and also as a protective coating. Excellent results are being obtained.
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GENERAL REFRACTORIES COMPANY
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Boston Buffalo Chicago Cleveland
Detroit Indianapolis New York
Pittsburgh St. Louis San Francisco
EVENS & HOWARD DIVISION-ST. LOUIS, MISSOURI
3580

boro, Mass.; R. D. Wood & Co., Florence, N. J., low bidder.

750 tons, 12-inch cast pipe for Manhattan, N. Y., bids July 15, contractors' letting.

600 tons of 30 to 48-inch cast pipe, New Haven, Conn.; to be closed this week.

300 tons, 30 to 48-inch cast pipe, New Haven, Conn.

300 tons, of 6, 8 and 16-inch cast pipe, Putnam, Conn.; to be closed this week.

250 tons, 12-inch cast pipe for Manhattan, N. Y., bids in, contractors' letting.

Unstated tonnage, various sizes of cast pipe, Gloucester, Mass., to cost $100,000; to be closed this week.

Steel Pipe Pending

50 to 150 tons each, civic stadium, Severance hall, and headquarters building for board of education, Cleveland.

Unstated tonnage, 1200 feet 13-inch lapweld steel pipe and 2300 feet 8⅝-inch seamless tubing, National Refining Co., Cleveland.

Warehouse Sales Reflect Holiday Shutdowns

Warehouse Prices, Page 101

Pittsburgh—Business remains seasonally slow with little change from activity of a month ago. Shading on some products continues, with bars and small shapes nominally quoted 2.90c and plates and shapes 3.00c.

Boston—Numerous small jobs take a fair volume from warehouse and maintain fairly good prices which might be shaded on round tonnages.

New York—Jobbing demand is marking time with expectations of little early improvement. Prices remain unchanged.

Philadelphia—July begins dull, accounted for by the recent holidays. June sales equalled May's. Prices are unchanged.

Buffalo—Orders were off considerably during the holiday week, but most operators continue to hope for a fairly good third quarter.

Chicago—Steel warehouses are finding a more active demand for sheets and a well diversified but light buying of bars and plates. Deformed bars from warehouse are moving well. Prices show no change.

Cincinnati—Warehouses reopened after a weekend closedown find demand continuing with little change from a rate established in May and June.

St. Louis—Union Electric Dam, Bagnell, Mo., and road contractors' takings have swelled June sales to May's level. Other consuming lines are unchanged. A lower trend in prices is noticeable.

Wire

Light Demand at Third Quarter Contracting Time Causes Pressure Against Prices

WIRE PRICES, PAGE 77

Chicago—Buyers of wire products are exerting strong pressure against prices, although a fair number of third quarter contracts have been signed on the basis of $2.15, Pittsburgh-Cleveland, for wire nails. Jobbers have fair stocks of common wire products, while consumers are carrying practically no material.

Worcester, Mass.—The wire market is quieter and shipments are falling off in size and volume. Plant operations are at about 50 per cent. Plain bright wire to dealers is firm at 2.40c, base, Worcester.

New York—Some looseness is noted in plain wire but more on extras than on the base, which is fairly steady at 2.30c, Pittsburgh. Nails are unchanged at $2.10 to $2.15, Pittsburgh. Trading is slack.

Pittsburgh—Wire business is little changed but seasonally light, with July shipments expected to be smaller than those of June. The decline comes mostly from lighter requirements of manufacturers' wire, with automotive tonnage at a low level. Prices remain steady on wire at 2.30c for plain wire and $36 for wire rods. A slightly stronger tone is noted in nails, with producers endeavoring to hold the market to jobbers at $2.15. The market is held fairly well in the Pittsburgh area, with $2.10 generally the minimum in other districts.

Cleveland—With no business to be figured on, nails are $2.15, Cleveland. Jobbers in some sections have bought at $2.10. Wire demand is the lowest of the year. Plain wire is quoted 2.30c, Cleveland.

Operations Low, Yet Show Slight Upward Trend

Pittsburgh—Ingot operations are lower at 60 to 65 per cent. Pittsburgh Crucible Steel Co. has shut down its 12 open-hearth furnaces during installation of a blooming mill. Finishing mills continue downward.

Chicago—Ingot output is about 65 per cent. Illinois Steel Co. has 13 of its 27 steelworks blast furnaces active, Inland Steel has four blowing, Youngstown Sheet & Tube Co., one at Indiana Harbor, and Wisconsin Steel Co., two at South Chicago.

Buffalo—Steelworks continue to operate at 48 per cent. There is no prospect of an early increase.

Cleveland—Ingot output has shown an uptrend from last week's shutdowns and with 15 to 24 openhearths on, district operations stand at 44 per cent. Otis Steel Co. has six steelmaking furnaces in production after last week's complete shutdown and Corrigan, McKinney has four of 14 on. Steel & Wire will produce with five of seven this week.

Birmingham, Ala.—Ingot production is around 65 per cent of capacity, 14 out of 23 open hearth furnaces producing. Finished steel production is estimated at 60 per cent of capacity. Fourteen blast furnaces are on pig iron. Steel fabricating shops are operating from 60 to 75 per cent.

Youngstown, O.—Mill operations after dipping sharply over July 4, returned to dull summer levels this week with average production about 60 per cent of capacity. Independents are operating 26 of their 51 open-hearth furnaces with bessemer output at 60 per cent. Corporation plants are operating between 55 and 60. Only 47 of 120 independent sheet mills are scheduled. Independent and Corporation tin plate production is at 70 per cent. Strip operations are slightly better at about 55 and the same percentage holds for bar mills, with Corporation mills slightly higher. Pipe mill operations are the one bright spot and are responsible for the consumption of much steel. Republic Steel Corp. added a second turn to the operation of its new large-size electric pipe welding mill. Output of all pipe mills is about 70 per cent.

New Republic Mill Full

Republic Steel Corp., Youngstown, O., states that the first of its electric pipe welding mills to be placed in operation is rapidly approaching capacity. The second unit will be completed shortly. Altogether, $8,000,000 is being spent by Republic at Youngstown on new pipe mills.

Pennsylvania railroad opened bids at Philadelphia, July 9, on structural shapes, boiler tubing and track fastenings.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY NO. 2

Chicago, furnace	$18.00
Chicago, lake dock	17.00 to 18.00
Pittsburgh, district fur.	19.00
Pittsburgh, delivered	19.13 to 20.13
Valley, furnace	18.00 to 18.50
Cleveland fur., local del.	18.00
Philadelphia, delivered	19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	18.50 to 19.00
Buffalo, fur., local del.	18.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail Brooklyn	20.91 to 21.41
Buff., all-rail, Newark	19.28 to 19.78
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	18.01
Alabama, del. St. Louis	17.42
Alabama, del. Cincinnati	16.69 to 18.19
Alabama, del. Cleveland	18.51 to 19.01
Ala., Phila., dock del.	17.25 to 18.25
Ala., Balt., dock del.	17.00 to 18.00
Alabama, New York dock	18.00 to 18.50
Ala., Boston dock del.	20.21
Tenn., Bir. base, local del	14.00
Tennessee, del. Cin.	16.69 to 18.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	19.00
Buff., all-rail, Brooklyn	21.41 to 21.91
Buffalo, all-rail, Newark	19.78 to 20.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del., Phila.	20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	20.00
Eastern, del., Phila.	20.76

MALLEABLE

Chicago, furnace	18.00
Chicago, lake dock	17.00 to 18.00
Cleveland fur., local del.	18.00
Pittsburgh district fur.	19.50
Pittsburgh, delivered	19.63 to 20.63
Valley furnace	18.50 to 19.00
Buffalo fur., local del.	19.00
Eastern Penn., delivered	19.76 to 21.41
Granite City, Ill., fur.	18.50 to 19.00
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	19.00
Pittsburgh, delivered	19.13 to 20.13
Eastern Penn., del.	18.00 to 18.50
Buffalo fur., local del.	18.00
Montreal, delivered	22.50
Valley furnace	18.00 to 18.50

BESSEMER

Valley, furnace	18.50 to 19.00
Pittsburgh, delivered	20.26 to 20.76

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.26 to 24.76
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Pittsburgh district fur.	18.50
Pittsburgh, delivered	19.13 to 19.63

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents

5—$21.50; 6—$21.50; 7—$22.00; 8—$22.50 to $23.00; 9—$23.00 to $24.00; 10—$23.50 to $27.00; 11—$24.50 to $28.00; 12—$25.50 to $30.00; 13—$26.50 to $32.00.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents

10—$29; 11—$31; 12—$33; 13—$35; 14—$37; 15—$39; 16—$42; 17—$45.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range	$4.80
Mesabi	4.65
Old range	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos.	58.65% nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.50 to 11.00
North African low phosphorus	10.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phos.	11.00
Spanish, North African basic, 50 to 60%	9.50 to 10.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future, short ton unit, duty paid	12.00 to 12.50
Chrome ore, 48%, net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	30 cents
Indian, 48-50%	30 cents
Brazilian, 46-48%	28 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore base	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	37.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00 to 37.00
Forging, Philadelphia	42.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.70c to 1.75c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.7
Spiegeleisen, 19-21%, domestic fur. spot†	34.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
*Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.15 to 1.20
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do. one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton, carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

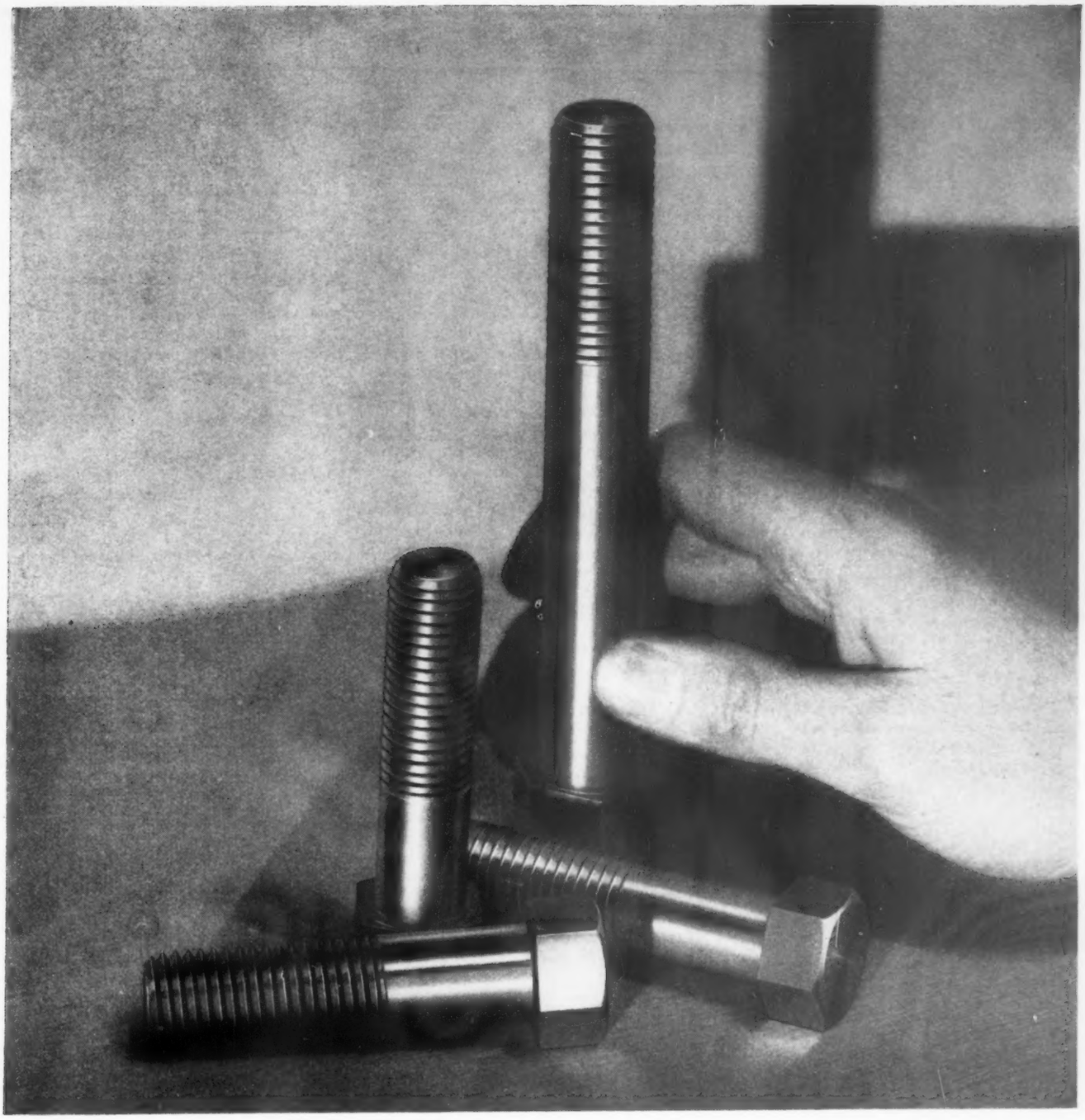
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east. tide., gross ton	19.50 to 20.50



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LOS ANGELES . . . 224 E. 11 Street

CLEVELAND CAP SCREWS

Pig Iron

Production Further Curtailed—Reduction Expected in July Shipments — Valley Price Off

PIG IRON PRICES, PAGE 88

Pittsburgh—Buyers of pig iron hesitate to inquire or contract for future requirements, preferring to place spot orders as required. Such business is mainly in carload lots and the aggregate is small. Shipments on old contracts are smaller than a month ago, operations at most foundries being at the lowest level of the year. Consumers' stocks are light and improvement in business would be noticed quickly. Producers hold to former prices for ordinary lots, though some buyers have been able to do less.

Boston—The market is quiet, sales during the week amounting to 1000 tons. Mystic Iron Works booked 600 tons for a Worcester, Mass., melter. Prices are unchanged.

New York—Pig iron awards are lighter, sales aggregating 4000 tons. Inquiries total approximately 5000 tons, including 2000 tons of No. 2 plain for the Thatcher Furnace Co., Newark, N. J. Others are for 400 tons of No. 2 plain and No. 1X for the Schenectady, N. Y., plant of the American Locomotive Co., and 500 tons for the Harrison, N. J., plant of the Worthington Pump & Machinery Corp. Buffalo iron is steady at $16 to $16.50, base, furnace, and southern iron is $18 to $18.50, delivered, New York docks. The A. P. Smith Mfg. Co., Bloomfield, N. J., has closed on 300 tons for delivery into fourth quarter.

Philadelphia—The Baldwin Locomotive Works, Eddystone, recently placed 1500 to 2000 tons of foundry iron with a Birmingham, Ala., producer. Current activity in the market is limited to several purchases of foundry grades ranging from 300 to 700 tons. Basic iron is down 50 cents, to $18 to $18.50, delivered, eastern Pennsylvania.

Cleveland—The outlook is for smaller shipments of pig iron in July than in June, and the June tonnage was slightly below that of May. Shipping instructions show definitely the first half of this month will not equal that of the comparable period in June. Melters have practically no stocks, but furnace stocks are substantial and show a tendency to increase. Sales by furnace companies with headquarters in Cleveland totaled 13,000 tons in the past week, compared with 15,000 tons in the week preceding. Westinghouse Electric & Mfg. Co. closed for about 1500 tons for Cleveland, and a larger amount for Trafford City, Pa., several sellers sharing in the orders. A Kokomo, Ind., melter is in the market for 1000 tons of malleable. Prices show a stronger competitive influence in outside territory. While $18, base, furnace, is steady for local delivery, $17.50 applies for shipment to nearby districts, and a price equivalent to $17, base, Cleveland, has been quoted by a northern furnace on iron for shipment to southern Ohio. A quotation below $18.50, base, valley, has been issued on foundry iron, and buyers are trying to do less than $18.50 for basic. In western Ohio and Indiana the lake furnace quotation continues $18, base, and in Michigan $18.50 to $19, the latter figure applying in Detroit.

Buffalo—Bethlehem Steel Co. has banked one furnace at Lackawanna, leaving only three in production. Two merchant stacks here will be banked before Aug. 1 unless there is a marked improvement in demand. Present output of iron represents 47 per cent of capacity. New inquiry includes one lot of 1000 tons. June orders were fairly satisfactory, but July shipments are expected to show a decrease. Leading producers here say $16, base, furnace, is minimum on large eastern inquiry. The district base holds at $18.50.

Youngstown, O.—A few contracts for pig iron are being booked for regular customers. The price has slipped 50 cents for outside shipment to $18, furnace, on No. 2 and basic, and $18.50, furnace, for malleable and bessemer. For district delivery prices are 50 cents higher than these levels. It is understood the Struthers Iron & Steel Co., which has been producing standard low phosphorus iron for several months, is contemplating changing the stack over to ordinary merchant iron.

Chicago—Pig iron production is being further curtailed. The five merchant stacks in the district are being operated at light draft, and prospects are that one or more may be banked this month. Sales are light but urgent shipment is being asked for all orders. A northern Indiana automobile company placed 1500 tons of northern and southern foundry iron and silvery iron. A Chicago melter bought 500 tons of foundry for one of its plants in Wisconsin. Northern pig iron sellers occasionally meet competition from dock iron which sells at $17 to $18, base. One hundred tons of charcoal iron was booked at $24, Lake Superior furnace.

Cincinnati—A sale of 750 tons of silvery iron to a Michigan consumer is the only feature of total orders for 3000 tons booked during the past week. The merchant furnace at Columbus, owned by the American Rolling Mill Co., has been banked.

St. Louis—New orders for pig iron in the past week were the smallest of any period so far this year, due partly to the holidays. The outlook is better, several important melters again receiving iron which they deferred. Sentiment among buyers and sellers has improved. Prices are irregular, furnace companies shading quotations for attractive orders.

Birmingham, Ala.—Melters are buying only for early requirements and indications point to a continuation of a light volume of business this month. Production balances shipments. The price for delivery in this district is $14, base, Birmingham, lower figures prevailing outside.

Toronto, Ont.—Total sales for third quarter are about one-third of those for second quarter. Spot business has diminished. Prices are unchanged.

Ferroalloy Shipments Are Down; Market Is Quiet

Ferroalloy Prices, Page 88

New York—Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $34, furnace, in carload lots, and ferromanganese, $99, duty paid, to users of carloads to 500 tons annually. Shipments of both products are slower than a month ago.

Special ferroalloys are in a dull market, without any change in prices of chrome and vanadium.

Pittsburgh—Ferroalloys remain in a quiet market with shipments paralleling the restricted rate of iron and steel operations. Spot buying continues dull, with prices unchanged at $103.79, delivered, for ferromanganese and $34 for spiegeleisen. Ferrotungsten is quiet.

Chicago—Part of a cargo of spiegeleisen shipped to this district from Port Colborne, Ont., has been unloaded at docks here. Several hundred tons of British ferromanganese also has been received at local docks.

Scrap

Signs Indicate End of Downward Movement Near—Prices Now Are Holding Better

Chicago—Features of the iron and steel scrap market indicate the downward movement halted. The normal flow of scrap into yards has been lessened by the long prevailing low market and lighter railroad and industrial offerings. While the supply is sufficient for present needs, many dealers feel that even a slight upturn in demand would create a fairly tight position. As a result, more sellers look to the long side, hesitating to book fresh business at present prices. A number are covering their shortages and this month are engaged in filling orders. A leading consumer bought a small quantity of melting steel at $12.50, gross, substantiating the range of $12 to $12.50. Melting steel on the Chicago & North Western list brought more

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham ..	10.50 to 12.00
Boston dealers..	9.00 to 9.25
Buffalo, No. 1..	13.00 to 13.75
Buffalo, No. 2..	11.25 to 11.50
Chicago	12.00 to 12.50
Cinti, deal	11.00 to 11.50
Cleve., No. 1..	12.00 to 12.50
Cleve., No. 2....	11.25 to 11.75
Det., No. 1 deal	11.00 to 11.50
Det., No. 2 deal	9.50 to 10.00
E. Pa., del. mill	12.50 to 13.00
N. Y. dl. R. R.	9.00 to 10.50
N. Y. deal No. 2	7.00 to 7.50
N. Y., deal yd.	6.25 to 6.75
Pitts. No. 1	14.75 to 15.25
St. L., No. 1 sel.	11.25 to 11.75
Federal, Ill.	11.00 to 11.50
Granite C., Ill...	10.00 to 10.50
Valleys, No. 1..	14.75 to 15.25

COMPRESSED SHEETS

Buffalo, dealers	11.25 to 11.50
Chicago	10.50 to 11.00
Cleveland	11.50
Detroit, dealers	10.50 to 11.00
E. Pa. new mat.	11.50 to 12.00
Pittsburgh	14.50 to 15.00
Valleys	13.75 to 14.25

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cinti, deal	10.25 to 10.75
Cleveland	9.00 to 9.25
Eastern Pa.	9.50 to 10.00
Pittsburgh	12.50 to 13.00
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	8.00 to 8.50
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	7.50 to 8.75
Buffalo	16.25 to 16.75
Chicago (3 ft.)	14.00 to 14.50
Chicago (2 ft)..	14.50 to 15.00
Cinti, deal.....	17.00 to 17.50
Detroit, deal....	15.00 to 15.50
Pitts. (open-hearth, 3 ft. and less)	17.00 to 17.50
St. Louis	14.50 to 15.00

STOVE PLATE

Birmingham ..	10.00 to 11.00
Boston, con....	9.00 to 9.50
Buffalo	11.00 to 11.50
Chicago, net....	9.50 to 10.00
Cinci., deal, net	8.25 to 8.75
Det., net, deal..	9.00 to 9.50
Eastern Pa.	10.00 to 10.50
N. Y., deal. mill	6.00 to 6.50
St. Louis	9.25 to 9.75

COUPLERS, SPRINGS

Buffalo	16.25 to 16.75
Chicago	13.50 to 14.00
Eastern Pa.	17.00 to 17.50
Pittsburgh	17.00 to 17.50
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	10.50 to 10.75

LOW PHOSPHORUS

Buf., billets and bloom crops..	17.50 to 18.00
Cleve. bil. and bloom crops.	17.50
Eastern Pa.	19.50 to 20.00
Pitts. billet and bloom crops	19.00 to 20.00
Pitts. sheet bar crops	18.00 to 18.50

FROGS, SWITCHES

Chicago	13.00 to 13.50
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	12.00 to 12.50
Cleveland	8.75 to 9.25
St. Louis	10.50 to 11.00

RAILROAD WROUGHT

Birmingham	10.00 to 10.50
Boston, dealers	8.00 to 8.50
Buffalo, No. 1..	10.00 to 10.50
Buffalo, No. 2..	13.50 to 14.00
Chicago No. 1	11.25 to 11.75
Chicago, No. 2	12.00 to 12.50
Cinti, No. 2.....	11.00 to 11.50
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 dl.	10.50 to 11.00
Pitts. No. 2	14.75 to 15.25
St. Louis, No. 1	9.00 to 9.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	7.00 to 7.50
Eastern Pa.	12.00 to 12.50
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	11.25 to 12.75
Chicago, No. 1	9.50 to 10.00
Cinn., No. 1 dl.	9.25 to 9.75
Cinn., No. 2	6.25 to 6.75
Cleve., No. 2....	8.25 to 8.50
Detroit, No. 1 new deal.	9.75 to 10.25
St. L. No. 1....	9.25 to 9.75
Val. new No. 1	13.00 to 13.50

MACHINE TURNINGS

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.50
Buffalo	8.75 to 9.00
Chicago	6.25 to 6.75
Cinn., deal	7.50 to 8.00
Cleveland	7.50 to 8.00
Detroit	6.00 to 6.50
Eastern Pa.	9.00
N. Y., deal	5.00 to 5.50
Pittsburgh	9.00 to 9.50
St. Louis	6.75 to 7.25
Valleys	10.50 to 11.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston, deal.....	3.50 to 4.00
Buffalo	9.75 to 10.00
Cinn., deal	8.00 to 8.50
Cleveland	8.75 to 9.25
Detroit, deal....	7.25 to 7.75
Eastern Pa.	8.50
N. Y., deal	4.25 to 4.75
Pittsburgh	9.25 to 9.75

CAST IRON BORINGS

Birming. chem.	12.00 to 13.00
Birming. plain	7.50 to 8.50
Boston, chem...	9.00 to 9.25
Boston, deal. ..	3.75 to 4.00
Buffalo	9.75 to 10.25
Chicago	7.75 to 8.25
Cinn., deal.	8.00 to 8.50
Cleveland	8.75 to 9.25
Detroit, deal. ..	7.50 to 7.75
Eastern Pa.	9.00
E. Pa., chem...	14.00 to 14.50
N. Y., deal.	4.75
Pittsburgh	8.50 to 9.00
St. Louis	9.25 to 9.50

PIPE AND FLUES

Cinn., deal	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	9.50 to 10.00
Chicago, net	8.50 to 9.00
Cincinnati	9.00 to 9.50
Eastern Pa.	10.00
N. Y., deal.....	6.50 to 7.00
St. Louis	10.00 to 10.25

FORGE FLASHINGS

Boston, deal. ..	7.25 to 7.50
Buffalo	11.25 to 11.50
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.50 to 10.00

FORGE SCRAP

Boston, deal. ..	6.50 to 7.00
Chicago	14.50 to 15.00
Eastern Pa.....	12.00 to 12.50

ARCH BARS, TRANSOMS

Chicago, net ..	13.75 to 14.25
St. Louis	14.00 to 14.50

AXLE TURNINGS

Boston, deal. ..	6.75 to 7.00
Buffalo	12.00 to 12.50
Chi. steelworks	9.50 to 10.00
Cleveland	11.75 to 12.00
Eastern Pa.	11.00 to 12.00
Pittsburgh	12.50 to 13.00
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham ..	19.00 to 20.00
Bos., ship. pt.	16.50 to 17.00
Buffalo	16.00 to 16.50
Chicago	16.80 to 17.35
Eastern Pa. ..	21.00 to 21.50
St. Louis	16.00 to 16.50

SHAFTING

Bost., ship pt.	13.00 to 13.50
Chicago	16.25 to 16.80
Eastern Pa.	18.00 to 18.25
N. Y., deal.	13.00 to 14.00
St. Louis	13.00 to 13.50

CAR WHEELS

Birming., iron..	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel ..	16.25 to 16.75
Chicago, iron....	13.50 to 14.00
Chi., roll. steel	15.00 to 15.50
Cincinnati	12.00 to 12.50
N. Y., iron, dl.	10.00 to 10.50
Pitts., iron	15.50 to 15.00
Pitts., steel	17.00 to 17.50
St. Louis, iron	12.00 to 12.50
St. Louis, steel	13.75 to 14.25
E. Pa. steel....	17.00 to 17.50
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup...	12.00 to 13.00
Buffalo	12.00 to 12.50
Boston, textile..	11.50 to 12.00
Chicago, mach.	13.45 to 14.00
Chi., railroad....	11.20 to 11.75
Chicago, agri...	10.90 to 11.50
Cinn., mach. cup., gross ..	17.75 to 18.25
Cleve, cupola ..	14.00 to 14.50
Det., net deal....	10.00 to 10.50
E. Pa. cupola..	13.50
N. Y. cup. deal.	9.50 to 9.75
N. Y., del. loc. foundries	14.00
Pitts. cupola....	14.00 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	12.00 to 12.50
St. L. No. 1	11.00 to 11.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	14.00 to 14.50
Buffalo, break.	8.50 to 9.00
Cleve., break...	9.00 to 9.50
Detroit, auto, net deal.	11.50 to 12.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.....	11.50 to 12.00
N. Y. No. 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.25 to 8.60
Pittsburgh	11.50 to 12.00

MALLEABLE

Boston, R. R....	15.00 to 15.50
Buffalo	15.50 to 16.00
Chicago, agri...	12.00 to 12.50
Chicago, R. R.	13.50 to 14.00
Cinn., R. R. dl.	15.25 to 15.75
Cinn., agri., dl.	14.25 to 14.75
Cleve., rail	16.00 to 16.50
Det. auto deal.	13.50 to 14.00
St. Louis, rail..	11.00 to 11.50

RAILS FOR ROLLING 5 feet and over

Birming. cup...	12.00 to 12.50
Boston	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Eastern Pa.	15.00 to 15.50
New York	9.50 to 10.00
St. Louis	12.00 to 12.50

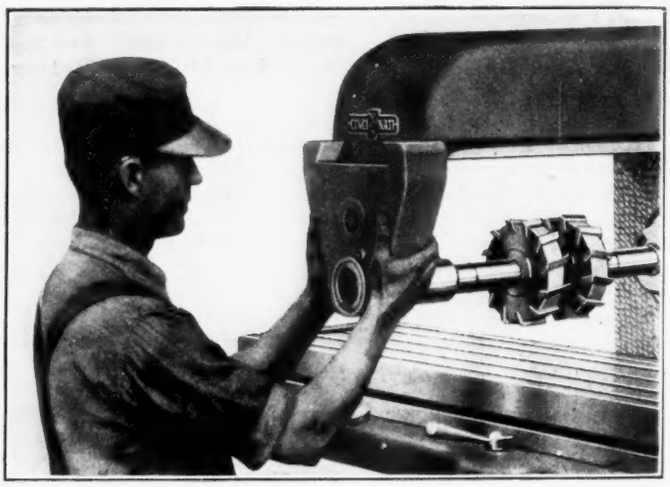
LOCOMOTIVE TIRES

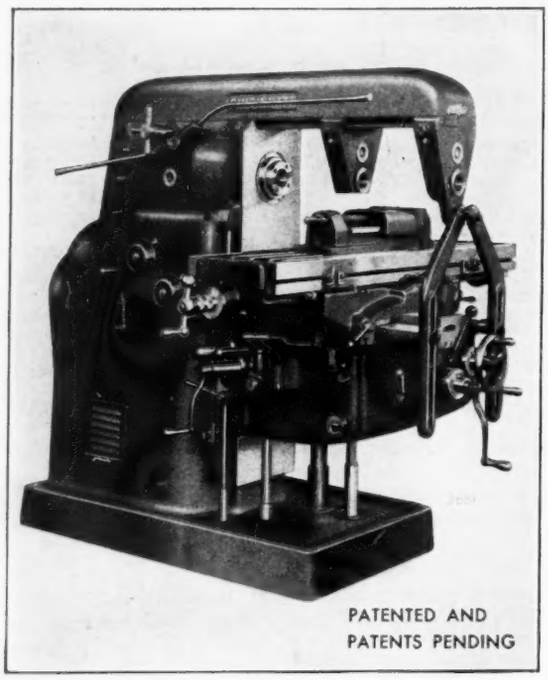
Chicago, cut	15.00 to 15.50
St. L. No. 1.....	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.50 to 14.00
Pittsburgh	17.50 to 18.00
Eastern Pa.	17.00 to 18.00
Buffalo	17.00 to 17.50

25 LBS. TO LIFT INSTEAD OF 50





Alcoa Aluminum is used in these No. 3 Cincinnati Millers for removable arbor supports and motor compartment cover.

How The Cincinnati Milling Machine Co. greatly reduced weight of removable arbor supports

Here is another actual instance of how the light, strong Alloys of Alcoa Aluminum are relieving machines of excess dead-weight—of how resistance in selling is cut because the eventual owners of the machines can operate them faster.

Made of cast iron the removable arbor supports of the No. 3 Cincinnati Milling Machine weigh about 50 lbs. each. Cast in the light, strong Alloys of Alcoa Aluminum these supports weigh about 25 lbs. each. On many jobs there are two of these supports to be taken off and put on. With the new Alcoa Aluminum supports the operator now has 50 lbs. less to handle.

The weight of the No. 3 Cincinnati Millers is further reduced by the use of motor compartment covers cast of Alcoa Aluminum. For large machines these new covers, in Alcoa Aluminum, weigh about 50 lbs. each. The old cast iron covers weighed about 200 lbs. each.

Hundreds of products have been benefited by the use of Alcoa Aluminum Alloys. Sales resistance has been cut as products have been freed of many pounds of costly dead-weight. Very likely the light, strong Alloys of Alcoa Aluminum can be used in your products to great advantage. They are as easy to fabricate as steel.

Send for these 3 books—they're FREE

One book tells how to Rivet Aluminum.

Another book deals with the Welding of Aluminum.

The third book covers Aluminum Screw Machine Products.

If you wish one or all three of these books address your request to ALUMINUM COMPANY *of* AMERICA; 2408 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA ALUMINUM

than $12.50. Little fluctuation is being shown in prices, but some sellers expect further drops of probably 25 to 50 cents on several grades. Despite light demand, it is pointed out that some scrap material is lower than even the recently depressed conditions should warrant.

Boston—Iron and steel scrap prices have held steady the past week, in the absence of a test. Inquiry is almost absent and sellers are not offering their accumulations. Stocks are small.

New York—Expiration of contracts is resulting in further reduction in scrap dealers' buying prices here. Among grades affected are mixed borings and turnings, turnings and clean cast borings. Others are cast iron car wheels, specification pipe and stove plate for mill consumption. Fresh consuming demand is small.

Buffalo—There have been no sales of scrap this month. Yard operations are small and prices nominal. Production is low, due to plant shutdowns for vacations.

Cleveland—Iron and steel scrap continues practically at a standstill, despite the fact that a consuming interest which closed down the last of June, has resumed partial operation. Scrap specifying by this consumer is about 50 per cent of that prior to the shutdown. A second mill is taking steel and turnings on the few orders it has outstanding. No. 1 heavy melting steel continues the steadiest of the list, holding at $12 to $12.50. Other grades are in slack demand and show a tendency downward.

Cincinnati—Dealers quotations on iron and steel scrap remain unchanged, a dull market being offset in part by a lack of wanted grades. Only one railroad list is current, the Norfolk & Western, with 2800 tons. Some activity was noted recently in steel specialties.

Philadelphia—Iron and steel scrap is quiet with prices unchanged, although the tone continues weak because offerings continue larger than needs. Some large steel users are saving their scrap for higher prices later.

Pittsburgh—Iron and steel scrap reflects the quiet of steelworks operations, with prices steady but untested on a number of grades. Heavy melting steel on the Pennsylvania railroad list, it is understood, brought up to $15.50 or about the same as a month ago. Mill buying is lacking to indicate any change in the average price of $15. Other grades are quiet. Absence of surplus scrap is a steadying factor. Prices are unchanged.

St. Louis—Users of iron and steel scrap are putting out more inquiries, and all classes of melters are willing to purchase at a price. Dealers report more interest than in several weeks, chiefly feelers.

There has been a drastic falling off in offerings, by railroads and other originators of scrap. This makes for a steadier tone and during the past week no further reductions were made.

Birmingham, Ala.—A small tonnage of heavy melting steel and other steel scrap is moving and this constitutes the market. Prices are low with heavy melting steel under $12.

Toronto, Ont.—Dull trading interest features business in the Canadian iron and steel scrap markets. Consumers are buying more conservatively and repeat orders are appearing at longer intervals. Small tonnage orders have been closed for iron scrap, but the market as a whole is slow. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$15.00
Steel axles	13.00
Car wheels	11.00
Stove plate	10.00
Wrought pipe	5.00
Turnings	6.00
Heavy melting steel	8.00

TORONTO

Steel axles	10.00
Iron axles	12.00
Heavy melting steel	9.00
Turnings	6.50
No. 1 mach. cast (net)	11.00
Malleable (net)	9.00

Lift Dominion Receivership

Receivership of the Dominion Iron & Steel Co., Sydney, N. S., was lifted July 2 and the property taken over by the newly-formed Dominion Steel & Coal Co., also of Sydney, organized to take over assets of the British Empire Steel Corp. The rail mills at Sydney are now on double time on orders for the Canadian National Railway. Orders for South Africa also are on the books.

Coke

Furnace Fuel Prices Lower in Some Districts — Connellsville Output Smallest Since January

COKE PRICES, PAGE 88

Pittsburgh—Beehive coke producers are adjusting operations to reduced demand and output is at the lowest level since January. The market is dull with spot buying of furnace coke limited to small lots. A light surplus is helping to maintain standard grades of furnace fuel at $2.50. Foundry coke is more active than the furnace grade, particularly for premium brands. Standard foundry coke is unchanged at $3.50 to $4.85.

Production of coke in the Connellsville region for the week ended June 28 was 27,800 tons, compared with 32,100 tons the preceding week and 101,140 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston—Cool weather has tended to sustain a demand for domestic coke, but the market for foundry fuel is quiet. Makers have reaffirmed their selling prices for third quarter period.

New York,—While beehive coke continues $2.50 to $2.60, Connellsville, the lower figure is the more representative and in some instances is being shaded. Business is dull. Standard grades of beehive foundry coke are unchanged at $3.50 to $3.75, Connellsville, and premium brands at $4.85, Latrobe, Pa. By-product coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Specifications for by-product foundry coke have decreased. Some foundries will close for vacations this month.

St. Louis—Specifications and new business show the usual summer recession. Shipments in June were the smallest for that month in a number of years. Some consumers have ample stocks. Prices are steady.

Birmingham, Ala.—By-product coke works continue in steady operation, with few ovens idle. Independent producers are carrying comparatively small stocks. Foundry coke is held at $5, base, Birmingham.

Pacific Coast

Northwest Has Largest Steel Awards of Year—Bridge Takes 8240 Tons—Warehouse Prices Are Stabilized — Concrete Bar Awards Heavier, Helping General Tonnage—Prices Firm

Seattle—Steel awards in the Pacific Northwest this week totaled over 12,000 tons, the heaviest week this year. The largest contract went to the United States Steel Products Co. This is for the superstructure of the Aurora avenue state highway bridge at Seattle, involving 7500 tons of carbon and silicon shapes, 500 tons of reinforcing bars and 240 tons of castings. The company was low bidder at $1,247,888. Western Pipe & Steel Co., San Francisco, booked 2200 tons of plates for the two-mile Bully Creek siphon of the Vale, Oreg., government irrigation project.

Mill prices of shapes and merchant bars have been reduced from 2.35c to 2.25c in this territory but reinforcing material is unchanged at 2.30c. Plates, which were recently stabilized at 2.25c, are still quoted at that level for small lots although large tonnages are based at 2.15c. These adjustments have been made to establish parity with prices at eastern mills and have not yet affected wholesale price schedules.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Specifications for reinforcing material are almost entirely confined to small tonnages, no new business of importance having recently developed. Orders are not numerous but improved demand is expected to follow the season of mid-summer depression. The Pacific Coast Steel Corp., Seattle, will furnish 1000 tons of concrete bars for approaches to the Aurora avenue bridge, obtaining the award through D. Nygren, general contractor. There is no inquiry for steel bars from foreign buyers.

Plate awards this week were confined to one lot of approximately 2200 tons reported booked by the Western Pipe & Steel Co., San Francisco. This project is an irrigation siphon at Vale, Oreg. Walla Walla, Wash., has opened bids July 9 for 175 tons of steel water pipe. Anacortes, Wash., has adopted plans for a water system covering 20 miles or more than 1500 tons of plates and possibly 400 tons of cast iron pipe. W. C. Morse Co., Seattle, is the engineering firm in charge.

Shape awards this week in addition to the Aurora bridge included 357 tons for the Tacoma steam power plant booked by Lidgerwood Pacific Co., Tacoma; 100 tons for a bank at Klamath Falls, Oreg., by Judson-Pacific Co. and 115 tons for four transmission towers at Seattle by the Pacific Car & Foundry Co. Unstated tonnage is involved in a contract for girders at Rock Island, Wash. This is pending. Bureau of public roads will open bids July 16 for a 128-foot deck steel arch span in Rainier national park requiring 47 tons of reinforcing and 114 tons of structurals.

Pipe Is Moving Well

Great Falls, Mont., has awarded contracts for water pipe for improvements to the municipal system. James B. Clow & Sons, Chicago, took the largest award at $67,214 for an unstated tonnage of pipe. Pacific States Cast Iron Pipe Co., Provo, Utah, will furnish 4650 feet of 6 and 8-inch main on a bid of $4901. Independent Foundry Co. will supply accessories and Ransselaer Valve Co. has the contract for valves and valve boxes. American Cast Iron Pipe Co., Seattle, is furnishing 125 tons of 6 and 8-inch monocast for projects at Yakima and Puget Sound navy yard, Wash., and Eugene, Oreg.

California Trading Slow

San Francisco—(*By Air Mail*)—Conditions in the Pacific Coast iron and steel markets have shown little change. Trading was restricted this week, due to the Fourth of July holiday. Many concerns closed their shops for the week end.

Out-of-stock distributors in the San Francisco district have established new levels and the present prices are being firmly maintained for the first time in many months.

Movement of foundry pig iron and coke continues limited to unimportant lots. Most inquiries are small.

Bars, Plates and Shapes

Awards of concrete bars aggregated 1599 tons. The Soule Steel Co. secured 200 tons for dormitories at Pasadena, Calif. An unknown interest took 315 tons for paving work in San Diego County, Calif. Bids have been opened on 438 tons for paving work in San Mateo county, Calif., and on 182 tons for a bridge in Siskiyou County. Bids are being taken on 300 tons for a store at 610 South Hill street, Los Angeles. Out-of-stock prices continue unchanged in the San Francisco district at 2.30c, base, on carload lots, Los Angeles quotations being $2 a ton higher.

Inquiries and sales of plates are confined to unimportant lots. Prices now range from 2.15c to 2.25c, c.i.f.

Structural shape awards aggregated 775 tons. The Pacific Iron & Steel Co. took 225 tons for a transit shed in Long Beach, Calif. No action has been taken on 4400 tons for the Ford plant at Richmond, Calif., bids on which were opened several weeks ago. The United States engineer office Sacramento, Calif., will open bids July 8 for 137 tons of sheet steel piling.

Other Finished Material

Awards of cast iron pipe were limited to one or two lettings. The Griffith Co. took 657 tons of 6 and 8-inch class B pipe for the improvement of Manchester street, Los Angeles. Demand for oil country goods and standard steel pipe remains quiet. Los Angeles awarded to several interests 160 tons of ¾ to 2-inch extra strong wrought iron pipe.

Jobbers in the San Francisco district have recently established new prices and for the first time in months are maintaining these prices on a firm basis. Steel bars, plates and shapes are firm at 3.40c, base. No. 24 gage galvanized sheets, No. 24 gage black sheets and No. 10 gage blue annealed sheets are firm at 5.00c, 4.35c, and 3.80c, base, respectively. Structural rivets are now quoted at 5.00c, base. In the Los Angeles district plates, shapes and bars are firm at 3.40c, black sheets, No. 24 gage, are quoted at 4.70c, blue annealed sheets, No. 10 gage, are firm at 3.95c, and galvanized sheets No. 24 gage are firm at 5.10c, base, f.o.b. warehouse.

Members of the Boston chapter of the American Society for Steel Treating recently elected the following officers for 1930-31: Chairman, Dr. G. B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology; vice chairman, A. D. Bach, New England Metallurgical Corp.; and secretary-treasurer, H. E. Handy, Saco-Lowell Shops, Biddeford, Me.

Steel and Cast Iron Pipe--Tubing

Welded Iron, Steel Pipe

Base Price $200 per ton
Base Discounts, Pittsburgh and Lorain, O., to jobber in carloads
Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less.

BUTT WELD

Steel In.	Blk.	Gal.	Iron In.	Blk.	Gal
½	58	44½	½	22	2
¾	62	50½	¾	28	11
1—3	64	52½	1—1½	30	13

LAP WELD

2	57	45½	2	23	7
2½—6	61	49½	2½	26	11
7—8	58	45½	3—6	28	13
9—10	56	43½	7—12	26	11
11—12	55	42½			

BUTT WELD

Extra strong, plain ends

½	55	44½	¼—⅜	19	+54+
¾	60	49½	½	21	17
1—1½	62	51½	¾	28	12
2—3	63	52½	1—1½	30	14

LAP WELD

Extra strong, plain ends

2	55	44½	2	23	9
2½—4	59	48½	2½—4	29	15
4½—6	58	47½	4½—6	28	14
7—8	54	41½	7—8	21	7
9—10	47	34½	9—12	16	2
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

SEAMLESS TUBING
Cold drawn; f.o.b. mill

Random lengths over 5 ft.....55%
Selected lengths, 1 to 18 ft.....53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. $37.00 to 38.00
Four-inch, Birmingham 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago 45.20 to 46.20
Six-inch and over, N. Y. 38.50 to 40.50
Four-inch, New York .... 41.50 to 42.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.70c
Pittsburgh	2.90c
Portland	3.00c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.70c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	2.665c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.30c
Cleveland	2.25c-2.44c
Detroit	2.30c-3.00c
Houston	3.00c
Los Ang. cl	2.40c
Los Ang. lcl	2.70c
New York	2.65c-3.10c
Philadelphia	2.55c
Pittsburgh	2.75c
San Fran. cl	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.60c
Pittsburgh	3.00c
Portland	3.00c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Clev., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.60c
Pittsburgh	3.00c
Portland	3.00c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	3.75c
Phila. *†	3.15c
Pitts. **	3.25c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.545c
Tulsa	3.95c

NO. 24 BLACK

Balt. *†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Clev. ***	3.75c
Detroit	3.95c
Los Ang.	4.70c
New York	3.55c to 3.65c
Phila. *†	3.70c
Pitts. **	3.65c
Portland	4.90c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt. *†	4.50c
Boston	5.45c
Buffalo	4.40c to 4.60c
Chicago (lc. del.)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.60c
Houston	5.40c
Los Ang.	5.10c
Pitts. **	4.30c
New York	4.25c
Phila. *†	4.25c
Pitts. **	4.30c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	3.00c
Pittsburgh	3.25c
Portland	4.15c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.50c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.25c
Pittsburgh	4.25c
Seattle	5.15c
St. Paul	4.00c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.
(a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100-in 500 lbs. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
New York	5.05c
Phila. (c)	4.95c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

SHEET AND TIN MILL PACK HEATING FURNACES

Lowest ultimate sheet cost is assured by using the

"Radiant Gap" Pack Furnace

Licensee
The Wean Engineering Company
(Licensed under patents and patents pending)

Charging End of Furnace

Discharging End of Furnace

- Normalizing Furnaces
- Automatic Tinning Equipment Including Pool & Davis Feeders
- Wet Tin Plate Cleaning Units
- Automatic Doublers
- Automatic Cold Roll Piling Machines

(All the above licensed under patents and patents pending)

- McKay Roller Leveling Equipment
- Sheet Scrubbing Machines
- Sheet Oiling Machines

THE WEAN ENGINEERING COMPANY, INC.

WARREN, OHIO

Flinn & Dreffein Co. — *Associated Companies* — The McKay Machine Co.

Metals

Light Trading Is Done While Prices Fluctuate Within Narrow Range—Copper Holds

New York—New business in nonferrous metals continues extremely light. Specifications against old orders also are slow, and the outlook is for continued slack demand through July. Prices in the past week have shown only minor fluctuations, with alternate strength and weakness and no decided trend in either direction.

Brass and copper mill products are quoted officially on the 12-cent basis, but some copper has been selling ½-cent lower. Wire mills still are running at fairly high rates but other mill business has tapered off.

Copper—Some custom smelters in the past week have sold fair quantities at 11.50c, Connecticut, while one custom smelter and all other producers have held their asking price at 12.00c. About a week ago some business was done at the latter figure, but since then the light sales have nearly all been at the lower figure. The tonnage of copper remaining at this price is believed small, but consumers who are covered on needs for this month have some tonnage bought well ahead, so it is uncertain whether there will be sufficient demand to firm up the market soon.

Zinc—Some buying was done about a week ago and with less selling pressure the price recovered from the low of 4.10c to a spread of 4.15c to 4.20c last Thursday. On Monday, June statistics showed continued rapid accumulation of stocks and the market became easier. Domestic deliveries fell to the lowest rate in several years. Production showed practically no change.

Tin—The market has alternated between firmness and easiness, with the more recent trend in the latter direction. The last monthly statistics showed continued accumulation of stocks at a rapid rate here and in England. The official visible supply, together with other known stocks now is over 46,000 tons or nearly twice the visible supply of a year ago. Production in recent months has been cut slightly. New business has been light.

Lead—New business is routine and producers' prices are steady. Little shading is reported in the outside market but the tonnage is light.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified Copper and brass product prices are based on 12.00c, delivered Connecticut, for copper

SHEETS	
Yellow brass (high)	18.75
Copper, hot rolled	21.75
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-pound base)	10.00
TUBES AND PIPES	
Seamless yellow brass (high)	23.75
Seamless copper	24.00
RODS	
Yellow brass (high, full turnings)	17.00
Naval brass	19.87½
ANODES	
Copper, untrimmed	19.25
WIRE	
Yellow brass (high)	19.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	7.25 to 7.50
Chicago	7.00 to 7.25
Cleveland	7.50 to 8.00
St. Louis	7.00 to 7.50
HEAVY YELLOW BRASS	
Cleveland	4.50 to 5.00
HEAVY COPPER AND WIRE	
New York	8.50 to 9.00
Boston	8.50 to 9.00
Chicago	9.25 to 9.50
Cleveland	8.00 to 8.50
St. Louis	7.50 to 8.00
RED BRASS BORINGS	
New York	6.75 to 7.25
YELLOW BRASS TUBING	
Cleveland	4.50 to 5.00
LIGHT COPPER	
New York	7.00 to 7.50
Chicago	7.25 to 7.50
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
LIGHT BRASS	
Boston	4.00 to 4.50
Chicago	3.75 to 4.00
Cleveland	3.50 to 4.00
St. Louis	4.00 to 4.25
ZINC	
New York	2.00 to 2.25
Cleveland	1.75 to 2.00
St. Louis	2.00
ALUMINUM	
Clippings, soft, Cleveland	12.00 to 12.50
Clippings, hard, Cleveland	8.00 to 8.50
Borings, Cleveland	5.00 to 5.50
Cast, Cleveland	7.25 to 7.50
Cast, Boston	7.50 to 8.00
Cast, St. Louis	7.50

Secondary Metals

Remelt aluminum No. 12	15.50
Brass ingot, 85-5-5-5	11.25

Coke By-Product Sales Are Slower; Prices Steady

New York—With one or two exceptions, buying of coke by-products has slowed up. Benzol is moving in fair volume, as is naphthalene, although shipments of the latter are below a month ago. Recent reductions in xylol and solvent naphtha failed to stimulate the market to any extent. Coke oven operations have been reduced and there are no great accumulations of material.

Coke By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.10 to $2.20

Phenol demand continues spotty, with some large consumers taking only current requirements. Prices are steady. Bulk of contracts for naphthalene have been covered, although spot business continues fair. The shipping season has been generally satisfactory to distributors, following a late start. Sulphate of ammonia has slowed up and some shading of $2.10 per 100 pounds delivered is reported.

Quicksilver Quiet, Steady

New York—Quicksilver is quiet and unchanged at $120 to $121 a flask.

Prices of the Week, Cents a Pound

	Copper			Straits Tin			Lead					
	Electro delivered	Lake delivered	Casting refinery	Spot New York	Futures New York	N. Y. Lead	St. L. East	St. L. Zinc	Aluminum 98-99%	Antimony Spot	Nickel Ingot
July 1	11.90	12.07½	11.75	30.12½	30.55	5.25	5.15	4.10	22.90	7.00	35.00
July 2	11.50	12.07½	11.75*	30.37½	30.75	5.25	5.15	4.12½	22.90	7.00	35.00
July 3	11.50	12.07½	11.75	30.25	30.75	5.25	5.15	4.15	22.90	7.00	35.00
July 7	11.50	12.07½	11.75	29.87½	30.50	5.25	5.15	4.12½	22.90	7.00	35.00
July 8	11.50	12.07½	11.62½	29.75	30.20	5.25	5.15	4.10	22.90	7.00	35.00

*Entirely nominal this date and after.

Europe

Stronger Competition Develops Between Britain and Continent —Output Decreases Steadily

Birmingham, Eng. — (*European Staff Service*)—Midland pig iron manufacturers held their monthly meeting June 26 but again refused to make any concession in price despite the fact that there has been a fall of 6s ($1.45) to 7s ($1.69) in furnace coke since the present level of iron prices was fixed. It is believed there will now be no move of any sort for the next two months owing to holidays. The quarterly meeting is due early in July but is not likely to bring any momentum, for the same reason. Furnacemen believe no amount of price reduction would bring in large orders. Stocks at Midland furnaces are mounting but apparently are not enough to warrant curtailment. It may safely be assumed that if stocks were becoming unwieldy furnacemen would have been ready to bring down the price. In the north of England a number of furnaces have already ceased operations and in North Lincolnshire another ironworks with two stacks is scheduled for closing.

In the Middlesbrough district the market is lifeless. Makers have decided they cannot proceed further with reductions despite pressure from consumers. A small export business is being done but shipments are considerably below those for the corresponding period of May. In the east coast hematite trade the downward trend of prices has not been arrested. Stocks are large and increasing at an alarming rate. In Scotland pig iron makers have ventured to lower prices by 1s 6d ($0.36) per ton in the hope of bringing some business. Rumors are circulating that a curtailment is probable owing to falling demand.

Steel Competition Keen

The position of the heavy steel industry continues to cause anxiety. Plants are running at little more than half capacity and everywhere there is a shortage of orders. Midland structural work is scarce but one firm is manufacturing steel transmission towers under two contracts for the Central England and North West England electricity schemes for carrying overhead cables. This will keep the department busy for the next two years. Bridge work and ordinary structural projects are lacking. For the few contracts that are being placed there is keen competition, finely cut prices and reduced profits. Automobile works generally have slackened earlier than usual but there is still a good deal of activity in heavy commercial vehicles. Morris Commercial Cars, Birmingham, has taken a contract for 236 bodies for lorries for the government of India, and municipal corporations are still extending their motor omnibus services.

Birmingham merchants selling Continental material find themselves in an unsatisfactory position, being encouraged by works on the Continent to underquote cartel prices. It seems that the time is fast approaching when the position must be clarified. At the moment it is one of confusion inasmuch as all quoted prices for billets and small steel bars are 3s ($0.72) below the cartel minima. As far as uncontrolled material is concerned prices are extremely low but even so the Midland market is apathetic. Merchants are not doing more business than they have handled during the last three months.

In South Staffordshire there is a dearth of orders for wrought iron. Stocks are low at consuming works and the low price of Continental iron and steel is a big attraction to consumers short of cash. Marked bar makers are still able to make a fair output and are the most fortunate in the Birmingham district. Much of the best iron being turned out is for railway and engineering replacements. Steel arches for collieries are also being sold on a moderate scale. There is no improvement in demand for steel scrap, which is weak, and merchants say it is impossible to quote prices with accuracy. The final price at which a contract is made depends upon the amount which the works is prepared to pay.

International Steel Competition Is Stronger

London — (*By Radio*) — Competition in international markets is growing sharper. A dispatch from Brussels states Belgian steelmakers find American producers competing keenly in South America and Japan. German interests say American, Belgian and British steelmakers are fighting for their export business. The Chinese sheet trade has been captured by Japanese mills. British pig iron is competing on the Continent and continental pig iron prices have been reduced. Continental markets are dull.

In Great Britain no improvement is expected until after August. Pig iron producers in the Midland, at Middlesbrough and in Scotland are feeling the effect of low offers from continental makers. East Coast hematite producers' stocks are increasing to considerable size.

British iron and steel production generally is decreasing, exports being slow. Steel demand is sluggish, many works reducing sschedules. Inroads from continental sources are not large but sufficient to unsettle the home market. Tin plate is sharing in the depression. The outlook for galvanized sheets is brighter. Norwegian interests have placed orders for two whalers and an oil tanker at New York.

April British Employment Below That of May

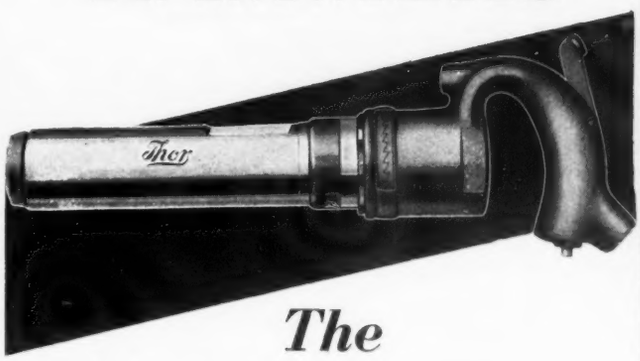
London—The British Ministry of Labor Gazette gives the following particulars relative to wages, unemployment, and cost of living in May, 1930.

In the pig iron industry, employment during May showed a decline from April. The percentage of workmen unemployed was 19.0 May 26, compared with 17.8 April 28, and 11.1 May 27, 1929. Returns from 76 firms, employing 18,680 workpeople at the end of May, showed a decrease of 3.3 per cent compared with April, and a decrease of 4.8 per cent compared with May, 1929.

At iron and steelworks, employment during May showed little change and continued bad. The percentage of insured workpeople unemployed was 30.2 May 26, against 30.9 April 28, and 18.2 May 27, 1929. According to returns received from firms employing 63,375 workpeople in the week ended May 24, the volume of employment in that week decreased by 4.8 per cent compared with April, and by 11.8 per cent compared with May, 1929. Of the 63,375 workpeople employed, 6439 were engaged at open-hearth furnaces, 1671 at puddling forges, 23,674 at rolling mills, 2666 in forging and

Thor Thor

RIVETING HAMMERS



The Fastest Hammer on the Market

The Thor is a hammer men like to use. Its easy action—the feel of the handle—its correct shape—its perfect balance—enables them to drive home rivets that will pass the inspector's approval.

Its powerful, hard-hitting blow and low air consumption are two features that have made the Thor popular. Because of its construction, the Thor does not develop a "back-kick".

If you have never seen a Thor in action, let us give you a demonstration. The wonderful service it gives has convinced users that there is no hammer like a Thor.

There is a size and type of Thor Riveting Hammer for every need.

275 ROTARY AIR DRILL

A Powerful, Efficient Drill

The Thor 275 is a one man drill and operates smoothly and without vibration. It carries a 50 lb. load at the same speed that it runs free. This is because the governor has opened the throttle. Between holes the 275 does not race or tear itself to pieces wasting air, but because its speed is governed, it idles along, consuming only a small amount of air.

Because of its construction, the 275 can be used for close work, which heretofore has always required a close corner drill. This feature alone makes it a valuable machine as close quarter drilling and reaming can be done at a much greater speed.

A demonstration in your shop will quickly prove how much more powerful the Thor 275 is than the piston type drill and the great saving in air consumption it makes possible.

Specifications: drilling cap., 1-1/2 in. reaming cap., 1-1/16 in. Speed 380 R.P.M. Weight 36 lbs.

INDEPENDENT PNEUMATIC TOOL CO.

New York ····· TOOLMAKERS SINCE 1893 ····· *London*

PNEUMATIC TOOLS ··· ELECTRIC Thor TOOLS ··· AIR COMPRESSORS

228 South Jefferson Street — Chicago, Illinois

pressing shops, 7948 in the foundries, 7575 in other departments, and mechanics and laborers numbered 13,402.

In the tin plate industry, employment continued to be affected by stoppages under arrangements for control of output. In the week ended May 31, 396 tin plate mills were in operation, against 411 in the week ended May 3, and 420 in the week ended June 1, 1929. In steel sheet manufacture, employment showed a slight improvement compared with the previous month. In the week ended May 31, 98 mills were in operation, compared with 92 in the week ended May 3.

Frontier Fortifications Give French Steelmakers Hope for Tonnage

Paris—(*European Staff Service*)—Activity in the French home market remains on the same level, as a good amount of business is being transacted and in many branches the trade people are not too much affected by present conditions. Buildings are being erected in large numbers, and it appears that from the country some good tonnage is ordered. The buying of agricultural machinery and implements is on the upward trend. However, the best hope of the metallurgical industry lies in the government program of national equipment. In the first place there is the organization of the French eastern border, and particularly of the Italian border, resulting from the denunciations emanating from the Italian press. In addition, many other works of general interest will be undertaken, either in France or in the French colonies. Besides this, the domestic market is affected by the condition of export trade, mills having of necessity to book orders for delivery in France in order to counterbalance the lack of orders from abroad.

Consequently, prices are much discussed, and any tonnage is booked at the lowest price quoted by all works. The situation is hard for transformers. Prices of semifinished products remain unchanged, 640 francs being quoted for 50-millimeter billets in ordinary basic steel. On the other hand, reinforced concrete bars are quoted at 630 to 650 francs, plus extras for dimensions, in the east. As a result, it is impossible for mills and metal producers to use first-choice material, and they have to use second-choice billets, which are sold at 430 to 450 francs.

Generally speaking, prices for various commodities sold by the comptoirs are unchanged, this being the case for semifinished products, beams, wire rod and plates. The plate comptoir has been transformed into a sales organization, which now is the sole seller of ordinary steel plates. The wire industry is in a satisfactory condition, but prices are likely to fall, following the trend of bars. Wire nails are quoted at 120 francs, wire at 105 francs, and galvanized wire at 180 francs.

British Trade More Active

London—(*European Staff Service*)—Exports of pig iron, ferroalloys and steel from Great Britain in May exceeded those of April, the greater part going to France. The principal items exported were tin and terne plates, 51,435 tons, of which 5081 tons went to the Straits Settlements and the Malay States.

Imports of pig iron and ferroalloys into Great Britain in May exceeded those of April, but imports of other iron and steel products fell off. Imports were mainly composed of sheet bars and tin plate bars, 43,978 tons, of which 35,926 tons came from Belgium, and blooms, billets and slabs, 37,921 tons, of which 14,302 tons came from Germany and 13,664 tons from Belgium. Figures are as follows:

	—IMPORTS—		—EXPORTS—	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929	12,310	222,410	45,430	319,520
1930				
Jan.	15,770	294,546	40,445	311,401
Feb.	24,252	235,144	26,865	267,422
Mar.	23,186	257,106	39,461	298,253
April	21,254	213,552	30,100	237,895
May	23,039	210,686	32,586	262,143

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 7	*British* Gross Tons U. K. Ports	*French* Metric Tons Channel Ports	*Belgium and Luxemburg* Metric Tons Channel Ports	*German* Metric Tons Rotterdam or North Sea Port
Export Prices f. o. b. Ship at Port of Dispatch—By Cable				
PIG IRON	£ s d	£ s d	£ s d	£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.44 3 7 6*	$15.83 3 5 0	$15.83 3 5 0	$16.31 3 7 0
Basic-bessemer	15.95 3 5 6†	14.61 3 0 0	14.61 3 0 0	15.83 3 5 0
Hematite, Phosphorus 0.02-0.05	17.53 3 12 0	24.76 630*	....	17.78 3 13 0
SEMIFINISHED STEEL				
Billets	$29.22 6 0 0	$22.89 4 14 0	$22.89 4 14 0	$22.65 4 13 0
Wire rods	41.39 8 10 0	30.44 6 5 0	30.44 6 5 0	30.44 6 5 0
FINISHED STEEL				
Standard rails	$40.18 8 5 0	$31.66 6 10 0	$31.66 6 10 0	$31.66 6 10 0
Merchant bars	1.74c 8 0 0	1.18c 5 7 6	1.18c 5 7 6	1.18c 5 7 0
Structural shapes	1.68c 7 15 0	1.12c 5 1 6	1.12c 5 1 6	1.12c 5 1 6
Plates, ship, bridge and tank	1.79c 8 5 0	1.44c 6 10 6	1.44c 6 10 6	1.49c 6 15 0
Sheets, black, 24 gage	2.17c 10 0 0	2.12c 9 12 6	2.12c 9 12 6	2.20c 10 0 0
Sheets, galvanized, 24 gage, corrugated	2.47c 11 7 6	2.52c 11 8 9	2.52c 11 8 9	2.97c 13 10 0
Bands and strips	2.17c 10 0 0	1.29c 5 17 6	1.29c 5 17 6	1.29c 5 17 6
Plain wire, base	2.06c 9 10 0	1.46c 6 12 6	1.46c 6 12 6	1.43c 6 10 0
Galvanized wire, base	3.04c 14 0 0	1.76c 8 0 0	1.76c 8 0 0	1.73c 7 17 0
Wire nails, base	2.39c 11 0 0	1.46c 6 12 6	1.46c 6 12 6	1.49c 6 15 0
Tin plate, base box 108 pounds	$ 4.38 0 18 0	....	....	$ 8.99 1 17 0

*France

Domestic Prices at Works or Furnace—Last Reported		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.44	3 7 6	$19.26	490(2)	$17.30	620	$22.31	83
Basic pig iron	15.95	3 5 6	20.63	525(1)	15.07	540	23.78	88.50
Furnace coke	3.17	0 13 0	6.60	168	6.00	215	5.78	21.50
Billets	29.83	6 2 6	24.36	620	22.60	810	31.58	117.50
Standard rails	1.79c	8 5 0	1.46c	810	1.62c	1,245	1.65c	136
Merchant bars	1.74c	8 0 0	1.22c	680	1.25c	965	1.66c	137
Shapes	1.84c	8 10 0	1.26c	700	1.22c	940	1.62c	134
Plates, ship, bridge and tank	1.95c	9 0 0†	1.46c	810	1.52c	1,170	1.85c	153
Sheets, black, 24-gage	2.28c	10 10 0	2.72c	1,510	2.60c	2,000	1.52c	126
Sheets, galvanized 24 gage, corrugated	2.58c	11 17 6	3.52c	1,955	3.06c	2,300	4.11	340
Plain wire	2.06c	9 10 0	2.03c	1,125	2.15c	1,650	2.67c	221
Bands and Strips	2.17c	10 0 0	1.37c	760	1.50c	1,150	1.92c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £19 6s 0d ($93.99) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.05) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

ARE YOU INTERESTED IN CUTTING YOUR FUEL BILL AT LEAST 10% A YEAR?

WE have no magic formula for insulation of heating furnace or oven. No guarantee to cut your fuel bills in half. Frankly, we don't believe any engineer designs or constructs heating equipment so wasteful of fuel that any such saving can be effected.

But we do know that the proper use of insulating brick will conserve heat so that less fuel will be used to accomplish a given job. That sounds reasonable, doesn't it? We asked a firm of engineers to examine some installations of Armstrong's and Nonpareil Insulating Brick, to determine the actual saving in fuel.

Actual, demonstrable reductions ranged from 9% to as much as 40%. Money savings from $200 to nearly $20,000 in a year. These figures are not the result of guesswork—not wild theory. They are hard facts, certified by an eminent firm of engineers. We'd be glad to have you ask us for proof.

Armstrong's (A) Product

TWO BRICKS ···TWO JOBS

Nonpareil Insulating Brick can be safely used for temperatures up to 1600° Fahrenheit. Armstrong's Insulating Brick up to 2500°. (In both cases, behind the refractories.) Both are machine sized to accurate dimensions—eliminating waste, cutting down on the cost of labor for laying, and insuring tight joints to reduce heat leakage. Both are of extra strength and may be reclaimed for use again. They are light in weight.

You may be surprised at the reasonable installation cost. We believe you will be, if you let our engineers consult with you on the specifications for your next job. We will gladly send you samples and descriptive matter in advance. Armstrong Cork & Insulation Company, 920 Concord Street, Lancaster, Penna.

Armstrong's and Nonpareil Insulating Brick

For Furnaces, Ovens, Kilns, and Lehrs

Machinery

Outlook Improved in Chicago District by Rumors of Impending Inquiries

New York—Machine tool buying and inquiry are at a standstill. Most plants in the East are down for at least the first 10 days in July. A few scattered sales are reported, limited to one or two tools at a time. Little business is on inquiry.

Railroads continue to take a few tools, but have not bought in the volume hoped for by builders. Airplane engine and automotive buying has slumped since the first of the year. Some activity is expected in the radio industry later this month, but little in the way of new equipment is expected. Dullness prevails in practically all types of equipment. Prices, however, are holding firm on the limited volume of business being placed. Builders appear united in the opinion that nothing in the way of new business would follow price concessions. Delivery is normal on all standard tools. Export trade has slumped, although Russia continues to inquire for machines and has a large list pending.

Worcester, Mass.—Despite the extreme dullness of the market there is no tendency toward lower prices as a stimulus to business. Most plants observed the week-end holiday gladly. The lack of inquiry prevalent for weeks and the absence of purchases save in single units still predominates. Production is at minimum.

Pittsburgh—Machine tool sellers are dependent upon small individual orders for business, with replacement work comprising practically all of current activity. Sellers report a fair seasonal demand despite the absence of large lists and are taking the opportunity of light industrial operations to promote the installation of improved equipment. Railroads continue poor buyers, with steel company purchases spotty. Westinghouse Electric & Mfg. Co. is a steady buyer. Both inquiry and pending work remain fair.

Chicago—A more hopeful feeling exists in the machine tool market, due in part to rumors of probable inquiries later this month and in August. In recent weeks pressure of buyers against prices has been more pronounced, but some advances for tools and attachments have been put into effect as of July 1. Outstanding among inquiries is one for 20 items of production equipment for the Chicago district operations of Western Electric Co., this list amounting to about $25,000 to $30,000. Sales of milling machines were active in the week just closed. Majestic Household Utilities Corp. purchased a number, in addition to scattered sales, including a large unit to a Cedar Rapids, Iowa, purchaser. The fact that a number of plants have shut down in the last week, some of which will continue on a vacation basis intermittently for several weeks, is restricting prospects, but indications are that a fair amount of business will be closed in July. Used tool inquiry continues fairly active.

Cleveland—July sales are holding even with little volume moving and inquiries few and scattered. Pressure against prices has not been evidenced and quotations are firm with no advances such as have been made in past dull seasons. Used machinery is slow, as well as repair parts for equipment. General Motors Radio Corp., Dayton, purchased several machines during the past week. A turret lathe builder reports prospects for August as appearing a little brighter, but this company is still operating only three days a week and booking only scattered orders for one and two machines. The machinery market in the Detroit district is practically lifeless and will continue so until after vacation season, it is thought.

Compound Cleanses Metals

An important use for sodium metasilicate is in cleansing metals to prepare them for painting or plating. Hot solutions of concentrations from 2 to 4 per cent, are excellent grease removers. The time will depend upon the amount and character of the grease and the nature of the work. The solutions lend themselves to use in boiling tanks, jets systems of cleaning with solutions impelled by steam or air, or any of the ordinary methods of cleaning with alkaline liquors, according to information compiled by the Philadelphia Quartz Co., Philadelphia. Only recently has sodium metasilicate been available commercially.

The cleanser must have good wetting power; it must get between the oil and the metal. Next, it must be able to disperse the oil to facilitate its removal. Third, the presence of some colloidal materials is of assistance. This is formed when the metasilicate is diluted for use, and still further when the salt has been spent partly by the action of hard water and fatty acid or, in the case of a solution which has stood for some time, by the carbon dioxide of the air.

Sheet and Tin Plate Wage Schedules Steady

Wages of workers in independent sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will continue unchanged for July and August. The average sales price of Nos. 26, 27 and 28 gage black sheets in May and June was 2.90c per pound, according to report by mill and amalgamated representatives. Wages for July and August are 22 per cent above base. Following is a comparison of price averages:

May-June	2.90c	unchanged
March-April	2.90c	—4.5 per cent
Jan.-Feb., 1930	3.05c	unchanged
Nov.-Dec.	3.05c	unchanged
Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
March-April	3.00c	unchanged
May-June	3.65c	+1.5 per cent
Jan.-Feb., 1929	3.00c	unchanged
Nov.-Dec.	3.00c	unchanged
Sept.-Oct.	3.00c	unchanged
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April	3.00c	unchanged
Jan.-Feb., 1928	3.00c	unchanged

Schedule Joint Meetings

The annual meetings of the National Hardware association of the United States, and the American Hardware Manufacturers association will be held jointly at the Marlborough-Blenheim hotel, Atlantic City, N. J., October 20-23. A program will be arranged covering problems in connection with merchandising and distribution. In addition to the regular sessions of the hardware groups, a meeting of the National Association of Sheet Metal Distributors will be held.

Further Simplify Bars

Washington—When concrete reinforcing bar manufacturers, distributors and users last year reduced the number of cross-sectional areas of reinforcing bars from 32 to 11, in co-operation with the division of simplified practice, they expressed the area in three decimal places. A revision, effective next Sept. 2 if accepted by the industry, limits the areas to two decimal places.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Plant of the Eastern Smelting & Refining Co., 109 West Brookline street, was recently damaged by fire. Loss, including adjoining property of United Furniture Co., $12,000.

BOSTON—H. E. Wyman Elevator Machine Works, care H. E. Wyman, 86 Bromfield road, has recently been formed to manufacture elevators, metal fixtures, jigs and machine products.

BOSTON—Walworth Co., 88 Pearl street, will erect a new structure on Summit street for storage of iron pipe, to replace unit recently destroyed by fire. Approximate cost, $15,000. (Noted May 15.)

WORCESTER, MASS.—Standard Foundry Co., 25 Southgate place, has acquired property adjoining its plant, formerly owned by the Worcester Woolen Mill Co.

MERIDEN, CONN.—Board of education will award contract soon for a 3-story trades school on Miller street. Cost is estimated at $150,000. L. Hamilton Inc., 22 Church street, is architect.

PAWTUCKET, R. I. — Anaconda Wire & Cable Co., 25 Broadway, New York, will expand plant of the Weill-Barnefield Co., 1075 Main street, Pawtucket, which it recently acquired.

PROVIDENCE, R. I.—Rabinowitz Mfg. Co., 137 Chestnut street, manufacturer of novelties and jewelry, will install bench equipment in a 2-story 40 x 57-foot addition now being built.

PROVIDENCE, R. I.—Langelier Mfg. Co., Arlington, maker of bicycle machinery, is reported investigating plant locations for the recently acquired Adams Bros. Inc., manufacturer of jewelry machinery. Activity of the Adams company will be continued in a new location.

New York

BROOKLYN—Federal Plumbing Supply Co., 1719 St. Marks avenue, plans construction of a 3-story 46 x 117-foot plant and storage building at St. Marks and East New York avenues. Cost is estimated at $40,000. Edward M. Adelsohn, 26 Court street, is architect.

BUFFALO—J. H. Williams Co., 400 Vulcan street, manufacturer of forgings and stampings, has begun construction work on a plant addition which will add 30,000 square feet to its main plant.

BUFFALO — Buffalo Bronze Die Cast Corp., 90 Arthur street, has a building permit for a 1-story machine shop. Estimated cost, with equipment, $24,000. Company manufactures aluminum bronze castings.

MINEOLA, L. I.—Nassau county board of supervisors has approved preliminary plans for a county hospital to be erected immediately at a total cost of $1,750,000. A power house to cost $150,000 is included in the proposed project.

NEW YORK—Board of education, Walter C. Martin architect, Flat Bush extension and Concord street, plans construction of an industrial high school which will include shops at East 145th street and Tinton avenue. Cost is approximately $1,600,000.

SYRACUSE—Solvay Process Co., 40 Rector street, New York, subsidiary of Allied Chemical & Dye Corp., 61 Broadway, New York, will enlarge and improve its plant here. Total cost of the project is estimated at $5,000,000.

Pennsylvania

AMBRIDGE—American Bridge Co., fabricator of structural steel, has begun installation of machinery in its new machine shop. Old machine shop will be razed to provide space for new plant units. Work has been started on a new beam shop. Total expenditures for improvements will approximate $1,500,000. (Noted Jan. 16.)

PHILADELPHIA—Philadelphia Storage Battery Co., J. M. Skinner vice president, Victory building, will manufacture radio receiving sets for automobiles under an arrangement with Automobile Radio Corp., Russell Feldman president, Long Island City, N. Y.

PHILADELPHIA — Philadelphia Gas Works Co., 1401 Arch street, has awarded contract to Haverstick Borthwick Co., Schaff building, for construction of an engine house addition at Thirty-second and Passyunk streets.

PITTSBURGH — General Bronze Co,. Grant building, will expand and improve its plants from part of the proceeds of a $3,000,000 bond issue now being offered. Company manufactures bronze bearings, bushings, and castings.

RANKIN—Carnegie Steel Co., Carnegie building, Pittsburgh, is reported to have improvement plans which include expenditure of over $500,000 at the Carrie furnace here for cranes and ladles.

New Jersey

CAMDEN—Plant of the Stanton Forging Co., Pershing street and Whitman avenue, was virtually destroyed by a recent fire. Loss was estimated at $25,000.

CAMDEN—Continental Can Co., 1016 East Water street, Syracuse, N. Y., manufacturer of metal containers, will build a plant of five or six stories here. Between 500 and 600 men will be employed in the new unit. Construction work is to begin in about one month, and operation is scheduled for next spring.

JERSEY CITY—Auto Turning Signal Co., recently formed to manufacture and deal in a new automobile accessory, has opened headquarters at 75 Montgomery street. Hyman Weinberg is president.

MOUNT HOLLY — Mount Holly Textile Co., 78 Washington street, is reported to be planning to rebuild its textile mill, recently damaged by fire. Power equipment will be included.

Delaware

WILMINGTON—Best Lock Corp. with offices at 908 Orange street here, plans to locate a new plant in or near this city to manufacture removable core locks. Present plant is at Seattle, Wash.

Ohio

CLEVELAND—W. S. Tyler Co., 3613 Superior avenue, E. P. Disbro vice president, advises it has plans for a 3-story, 70 x 160-foot plant at East Thirty-sixth street and Superior avenue. Cost is estimated at $150,000. George S. Rider Co., Marshall building, is architect. Company manufactures ornamental iron and bronze products.

TOLEDO—Schultz Die Casting Co., recently organized to deal in dies, castings and machinery, has acquired the plant of Toledo Tap Co. at 1810 Clinton street. Plant and equipment needs to be filled before production begins about August 1 will cost over $150,000. More than 100 men will be employed. (Noted June 26.)

YOUNGSTOWN—Fokker Aircraft Co., 110 East Forty-second street, New York, is reported to be inquiring for plant sites here, according to H. S. Warwick, chairman of the chamber of commerce industrial committee, who has also received inquiries from Bell Mfg. Co., a Pennsylvania organization engaged in making collapsible steel shipping containers, and Langley Corp., maker of aircraft.

Indiana

FORT WAYNE—Wayne Co., 113 West Wayne street, plant at Coombs and Cochrane streets, was recently damaged by fire. Loss was estimated at $40,000. Company manufactures oil burners.

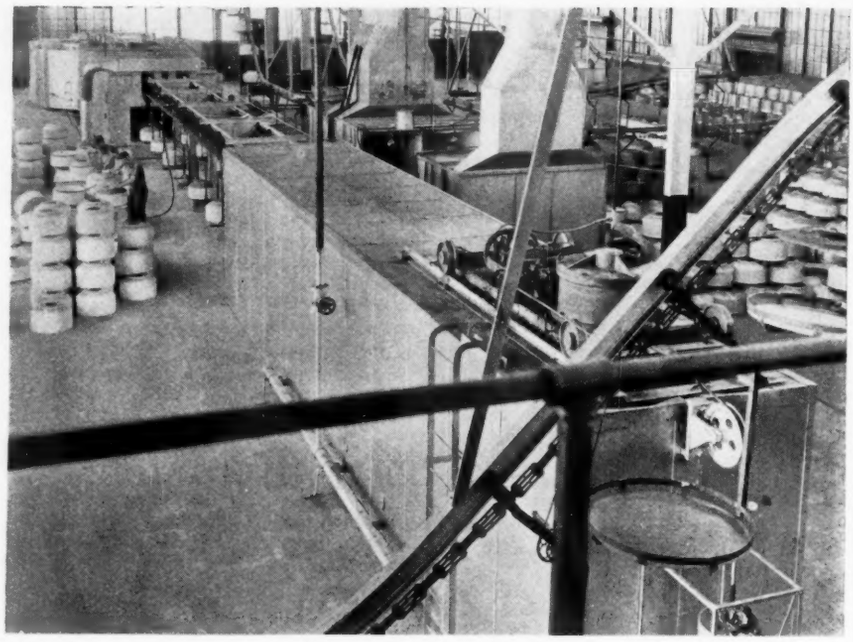
HAMMOND—State Line Generating Co. plans an addition to its power house here.

INDIANAPOLIS — Adams Plating Co., 138 West Tenth street, plans plant expansion and installation of equipment, including plating tanks.

LAFAYETTE—Purdue university

FERRO Creates High Standards in Enameling

THE FINEST porcelain enameling equipment in existence is installed in the new enameling plant of the Mullins Manufacturing Corporation, Salem, Ohio. The plant has a present capacity of 1,200 enameled tubs daily, and this may be doubled at any time without increasing the floor space.



View in Enameling Plant of Mullins Manufacturing Corporation.

Ferro Enameling Equipment

FERRO equipment in the Mullins plant includes pickling apparatus, enamel grinding mills, spray booths, dip tanks, a semi-rotary type continuous electric enameling furnace, and an extensive shop conveyor system.

If you are interested in a porcelain enameling installation or in improving your present equipment, it will pay you to let FERRO Engineers survey your requirements and to make recommendations.

FERRO experience covers the installation of forty-five complete enameling plants, thirty-nine continuous furnaces, and 306 box-type furnaces. These installations are for doing all classes of enameling work.

Use FERRO Pickle Pills and Reduce Pickling Cost

They offer a quick, cheap and easy means of controlling the acid and iron content of the pickling bath. The list of users of FERRO PICKLE PILLS reads like a "Who's Who" of industry. *Investigate now!*

FERRO ENAMEL SUPPLY COMPANY

Porcelain Enamels—and Enameling Equipment

CLEVELAND, OHIO

will build an electrical engineering building at a cost of about $115,000.

LOGANSPORT—Power plant of the Logansport division of the Pennsylvania railroad, H. A. Hobson superintendent, was recently damaged by fire. Estimated loss, $3000.

MARION—Silent Alarm Co. plans construction of a plant on East Charles street, work to be done by company's forces. Private plans. Estimated cost, $40,000.

RICHMOND—City council is considering acquisition of generating equipment to add to the municipal power plant, at a possible cost of $1,250,000, and auxiliary service facilities at a cost of $115,000.

Michigan

ADRIAN — American Chain Co., Grand Central terminal, New York, is planning moving one of its new departments in the automobile field from an eastern plant to this city. Page Steel & Wire Co., a subsidiary, manufacturer of fence and wire products, now has a plant here.

DETROIT—Michigan Steel Corp. 2400 Union Trust building, has started plant expansion at its Ecorse, Mich., mill. Production will be increased 30 per cent. Construction work is to be completed by fall.

DOWAGIAC—Kulp Theft Proof Lamp Co. has secured a lease for a part of the warehouse of the Beckwith Co. and will establish operations there. Initial production of 1000 lamps daily is planned.

IMLAY CITY—B & L High Compression Spark Plug Co., a recently formed organization, has purchased a site on Almont avenue covering 60,000 square feet and will erect a factory. Temporary operations will be started in the old D. U. R. building. Company is headed by Charles C. Bell.

PLAINWELL—Michigan Paper Co. has awarded contract for construction of a power plant, 50 x 100 feet, to O. F. Miller Co., Pratt building, Kalamazoo, Mich. Three 600-horsepower boilers and equipment will be installed.

WAYNE—Wayne chamber of commerce officials are reported to be negotiating to bring an aircraft manufacturer to this city. Plant location will be next to Detroit-Wayne Industrial airport.

Illinois

CHICAGO—Great Lakes Boat Building Corp., recently organized to take over a former company of the same name, plans expansion at its plant at 3250 Washtenaw avenue. Company builds and repairs boats.

CHICAGO—Whelco Laundry Machinery Co., Fifty-fourth street and Western avenue, will rebuild portions of its plant recently damaged by fire. Plant of New City Iron Works, adjoining the Whelco company, damaged also, will be remodeled and rebuilt. (Noted June 26.)

HARVARD—Hunt, Helm & Ferris Co., manufacturer of dairy and barn equipment and conveyor systems, plans construction of a 1-story and basement addition to its plant. W. Schulzke, Moline, Ill., is architect.

MACOMB—American Steel Products Co. will have a secondary plant here on a site recently acquired. Small stoves will be made, and the new unit will aid the main plant in making poultry raising equipment.

ROCKFORD—Sanitary district of Rockford, G. J. Boehland president, has rejected previous bids and will receive additional bids until July 15 for four centrifugal pumping units, two hot water circulating pumping units, sludge pumping unit, and other equipment for proposed sewage treatment plant.

Southern States

WASHINGTON—Navy department, bureau of yards and docks, will receive bids until July 16 for construction of a 1-story smelting plant, 57 x 102 feet.

LOWESVILLE, VA.—Southern Mineral Products Corp., Afton, Va., is reported to have let contract to Stone & Webster, contracting engineers, 120 Broadway, New York, for construction of a mining and refining plant here at a cost of over $1,000,000. A machine shop is included in the plans.

UNIVERSITY, VA.—Board of visitors, University of Virginia, Dr. Edwin A. Alderman president, has authorized projects which will include construction of a wing to Cobb chemical laboratory at a cost of about $100,000.

DURHAM, N. C.—Wright Automatic Packing Machine Co. is considering construction of a plant here for the manufacture of tea and tobacco packing machines.

NEW ORLEANS—Schaff's Foundry, 2534 St. Peter street, is erecting an addition to its galvanized iron pattern shop.

SHREVEPORT, LA.—L. E. Myers Co., Allen building, Dallas, Tex., has been awarded contract for the construction of an addition to the arsenal plant of the Southwestern Gas & Electric Co. Cost is estimated at about $50,000.

Texas

FORT WORTH—Oil Field Engineering Corp., Box 414, advises through Jon R. Long, president and general manager, that the company has been organized to manufacture oil and gas production equipment. Equipment and machinery have been purchased for the plant which is being erected. (Noted July 3.)

Oklahoma

TULSA, OKLA.—V. L. DuBois, 1531 North Cheyenne street, formerly of DuBois Engineering & Machine Works, has plans for a machine shop for the manufacture of oil field valves and specialties.

TULSA, OKLA.—Improved Steel Gas Engine Head Co., J. S. Newlon manager, has leased a building adjoining its machine shop and will install a welding shop. Company manufactures steel heads for gas engines. Machine tools have been purchased. Some welding equipment will be needed.

Missouri

ST. LOUIS—St. Louis municipal airport will be the site of a new National Guard hangar. Present hangar will be taken over by Robertson Airplane Service Co., 408 Pine street, for a passenger depot. New unit will cost about $75,000.

SHREWSBURY—St. Louis County Gas Co., 231 West Lockwood street, Webster Groves, Mo., has awarded contract for construction of a 1-story addition to its generator plant here to Woermann Construction Co., 1441 Syndicate Trust building, St. Louis.

Wisconsin

MILWAUKEE—Charles H. Stehling Co., 401 Fourth street, has acquired rights to the manufacture of two agricultural machines formerly manufactured by Dependable Harvester Corp., 1172 Forty-ninth street. George T. Stehling is president of the Stehling company.

MILWAUKEE—Badger Carton Co., 387 Ninth street, has purchased property of the Hamilton Aero Mfg. Co. Main building, 135 x 477 feet, is being reconditioned and will be equipped with new machinery for the manufacture of paper and board cartons and containers. Henry J. Hanauer is manager of the Badger company.

PHELPS—The board of education has awarded contract to E. C. Davison, Beaver Dam, Wis., for construction of Phelps high school, with boiler room wing, 20 x 33 feet. Robert A. Messmer & Bros., 221 Wisconsin avenue, Milwaukee, are architects.

RACINE—The commissioner of public works has closed bids on construction of a sewage pumping station, with pumping equipment, on Sixth street. Joseph W. Beaugrand is city engineer. Alvord, Howson & Burdick, 8 South Dearborn street, Chicago, are consulting engineers.

Minnesota

ELY—Pickands, Mather & Co., Union Trust building, Cleveland, will soon receive bids for construction of an engine house here. Plans are private. Estimated cost, $50,000.

Iowa

GRUNDY CENTER—Northwestern Power & Light Co., Cedar Rapids,

Iowa, plans a power plant addition here.

INDEPENDENCE — City council will purchase one 400-kilowatt diesel engine unit and auxiliary equipment for municipal power plant. Charles L. King is city clerk.

Nebraska

OMAHA—State board of control, state house, has begun plans for a power plant for Lincoln school for deaf, estimated to cost about $40,000 with equipment. Lawrie & Stockam, Paxton building, are engineers.

OMAHA—Haskins Brothers Co., 115 Hickory street, is reported to have plans under way for a power plant installation which will cost $50,000 with equipment. Federal Engineering Co., Central Office building, Davenport, Iowa, is engineer.

Kansas

WICHITA—C. L. Knight Lumber & Box Co. has purchased from Stearman Aircraft Co. the Air Industries Foundry. Knight company plans expansion of facilities.

WICHITA—J. A. Butts has awarded contract for a 2-story machine shop and service station, 220 x 225 feet, to be located at Fannin and Douglas streets. Cost is estimated at $75,000.

Colorado

MEEKER—City council plans installation of pumping machinery and auxiliary equipment for water system. Estimates are said to be nearing completion. Black & Veatch, Mutual building, Kansas City, Mo., are consulting engineers.

Arizona

GLOBE—Old Dominion Co., copper mining and smelting, 50 Congress street, Boston, will improve and add to units at its mines here. Contracts have been let for alterations and preliminary work is expected to be completed by Sept. 1. New equipment and machinery will be purchased.

PHOENIX—Chamber of commerce advises through M. E. Bemis, industrial secretary, that a bond issue of $3,422,000 has been authorized by taxpayers for improvements to muncipal waterworks, for pumping machinery, equipment, and mains. (Noted June 26.)

New Mexico

HOBBS — Phillips Petroleum Co., Bartlesville, Okla., proposes to construct a new refining plant here for which air compressors, gas engines, and other mechanical equipment will be purchased. Cost of the entire project is over $500,000.

Pacific Coast

SEATTLE—General Illuminating Co., 1530 Westlake north, manufacturer of metal signs, advises that plant reconstruction and additions recently noted will add 12,000 square feet of space to its plant here, which is to be made headquarters of the company's operations Some machinery will be needed, although definite plans are held in abeyance. (Noted June 26.)

LOS ANGELES—U. S. Electric Mfg. Corp., 340 East Fourth street, is reported to be enlarging plant facilities.

LOS ANGELES — Meyberg Co., manufacturer of lighting equipment, has moved its plant from 631 South Grand boulevard to 2845 West Seventh street.

SAN FRANCISCO—McGill Glider Co. will move to larger quarters at 225 Tehama street, where it has acquired 5400 square feet of space. Company plans construction of a new type of glider.

SAN FRANCISCO—Hearst Aircrafts Ltd., newly formed organization for aeronautical manufacturing and transportation, will engage in commercial aircraft business, manufacturing planes and flying equipment and rebuilding aircraft. Storage buildings, hangars and other units will be located in the future. Company is headed by George R. Hearst, 2100 Pacific avenue, and has been incorporated with $50,000 capital. Headquarters will be located here.

Dominion of Canada

ST. JOHN, N. B.—United Nail & Foundry Co., being formed by the merger of Consolidated Foundry and St. John's Nail Mfg. Co., with capital of $360,000, is considering expenditure of $60,000 for new plant and equipment. Future expenditures may total $100,000.

BROCKVILLE, ONT.—Eugene F. Phillips Electrical Works Ltd., 5795 De Gase street, Montreal, Que., manufacturer of copper wire, has announced an expansion program to be undertaken soon. Most of an expenditure of $750,000 will be on the company's plant here. Lawford Grant is president.

COURTRIGHT, ONT.—Council contemplates purchase of electrical-driven pump for waterworks plant. Clerk, R. G. Stewart.

FALCONBRIDGE, ONT.—Falconbridge Nickel Mines, Concourse building, Toronto, Ont., is having plans prepared by Richard Gill, architect, for a $25,000 addition to smelter here. Building to be 80 x 140 feet.

SCHUMACHER, ONT.—McIntyre Porcupine Mines Ltd. will construct a new mill at its No. 11 shaft and move present offices and shops to the new structure. As much as possible of the old mill will be salvaged. J. P. Bickell is president.

STRATFORD, ONT.—H. & S. Screw Machine Corp., 5676 Twelfth street, Detroit, is in the market for new 60 cycle electric meters for its branch plant here.

TORONTO, ONT.—Canada Foils Ltd., 7 Fraser avenue, will build a 1-story plant addition to cost $30,000. F. S. Mallory, 11 Roseberry avenue, architect, is asking for bids. No closing date has been set.

TORONTO, ONT.—Canadian Austin Car Co. Ltd., recently organized subsidiary of the Austin Co., Birmingham, Eng., manufacturer of motor cars, has established an assembly plant at 297 Campbell avenue. Manufacturing will be undertaken later. E. P. Clarkson is managing director.

WALKERVILLE, ONT.—Universal Button Fastening & Button Co. of Canada Ltd., 240 Walker Road, has awarded contract to Allan & Earl Ltd., Equity Chambers, Windsor, Ont., for a plant to replace one recently destroyed by fire. Building to be one-story, 60 x 170 feet. (Noted June 12.)

WATERLOO, ONT.—Waterloo Mfg. Co., A. T. Thom general manager, will receive bids soon for construction of plant units here. Main building, 450 feet long, is to be completed by next fall. Company manufactures agricultural machinery. (Noted May 22.)

Recent Incorporations

LOS ANGELES—Aviation Services Ltd. has been incorporated with $150,000 capital by J. E Waterhouse, 1865 Lake Shore avenue, to manufacture, store and repair airplanes.

WILMINGTON, DEL.—Multiplex Theaters Equipment Corp. has been incorporated with $1,000,000 capital by Joseph Handler, Industrial Trust building, to deal in apparatus for talking motion pictures.

CHICAGO—Mar-Le Inc. has been incorporated with $25,000 capital by Mayer, Meyer, Austrian & Platt, attorneys, 208 South LaSalle street, to deal in metal novelties.

CHICAGO—L. F. Harris Inc. has been incorporated with $10,000 common and 4000 no par common shares by Rosenberg, Braude & Zimmerman, 58 East Washington street, to construct me-

chanical instruments and implements.

EVANSVILLE, IND.—Farm Tools Inc. has been incorporated with 5000 preferred and 50,000 common shares by Richard Rosencranz, 1126 Powell avenue, to manufacture harvesting and other agricultural machines.

NEW ORLEANS—Murphy Iron & Boiler Works has been incorporated with $25,000 capital by Gus B. Genin, 1906 Audobon street, to deal in boilers.

MARBLEHEAD, MASS.—Marine Glider Corp. has been incorporated by Dana Jefferson and H. H. Talbot to manufacture amphibian gliders.

DETROIT—International Development Co. has been incorporated with 250,000 no par shares by John P. O'Hara, attorney, 1203 Majestic building, to develop mechanical devices and deal in manufactured products.

FLINT, MICH.—Flint Stamping & Tool Co., has been incorporated with $25,000 capital by Donald A. Smith and Henry M. Preston, 5802 South Dort highway, to manufacture and sell metal stampings, tools, dies and special machinery.

JERSEY CITY, N. J.—General Iron & Brass Co. has been incorporated with $125,000 capital by Sol J. Berger, 390 Johnson avenue, to deal in iron and brass.

NEW YORK—Cox & Stevens Aircraft Corp. has been incorporated with 500 preferred and 100 common shares by Daniel H. Cox, naval architect, 341 Madison avenue, to manufacture and deal in aircraft.

NEW YORK—Fountain Accessories Corp. has been incorporated with 100 common shares by Herman Kahn, 15 Park row, to deal in machinery.

NEW YORK—Efficient Foundry has been incorporated with $10,000 capital by G. G. Lake, 2 Lafayette street, to operate a foundry.

NEW YORK—Multisembler Corp. has been incorporated with $300,000 capital by S. L. Siegel, 217 Broadway, to deal in tools.

NEW YORK—Dairymen's Stamping & Retinning Co. has been incorporated with $50,000 capital by A. Linton, 122 East Forty-second street.

GREENSBORO, N. C.—Greensboro Auto Parts Co. has been incorporated with $100,000 capital by O. B. Teague and A. H. Thaeler, to deal in automobile accessories.

PHILADELPHIA—B. Black Inc. has been incorporated with $500 and 100 no par shares by D. H. H. Felix, 1416 South Penn square, to make and deal in hardware.

PHILADELPHIA—Selas Co. has been incorporated with $5000 and 1000 no par shares by Henry W. LeBoutillier, Wayne, Pa., to manufacture appliances for the utilization or combustion of gas or other fuels from iron or steel.

WASHINGTON, PA.—Sheet Metal Corp. has been incorporated with $5000 and 4000 no par shares by R. C. Stolfer, 218 West Chestnut street, to manufacture and deal in sheet metal and kindred products.

COLLIERVILLE, TENN.—Manncraft Airplane Co. has been incorporated with 2000 preferred and 6000 common shares by H. W. Mann and Edward C. Huffaker, to manufacture, buy and sell airplanes.

DENISON, TEX.—Century Culvert Co. has been incorporated with $10,000 capital by Julian C. Field to manufacture culverts and sheet metal products.

HOUSTON, TEX.—Hot Dip Galvanizing & Tinning Co. has been incorporated with $2800 capital by Thomas M. Adams, 6614 Harrisburg boulevard.

McGREGOR, TEX.—Universal Railway Device Co. has been incorporated with $25,000 capital by A. C. Amsler to manufacture metal railroad specialties.

REFUGIO, TEX.—B. F. Cowan Machine Shop has been incorporated with $25,000 capital by B. F. Cowan to manufacture oil field tools and do general machine work.

SAN ANTONIO, TEX.—J. D. King Inc. has been incorporated with $1000 capital by J. D. King, 313 Zacatecas street, to manufacture sheet metal products.

WICHITA FALLS, TEX.—West Texas Pipe & Metal Co. has been incorporated with $2000 capital by M. A. Bundy, 205 Mississippi street, to deal in pipe and metals.

New Trade Publications

LOADING CHAIN—High strength with minimum weight is claimed for its loading chain in a leaflet by the American Chain Co. Inc., Bridgeport, Conn. Specifications are given.

STEEL CASTINGS—Industrial Steel Casting Co., Toledo, O., in a current bulletin stresses the advantages of steel castings and tells of the care used in its foundry to produce castings of high grade.

TRAMRAIL—A bulletin by the Cleveland Electric tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., is devoted to safe handling of loads overhead by means of its rail and carrying devices.

NUTS—National Machinery Co., Tiffin, O., presents in a current bulletin the accomplishment of the Bourne-Fuller Co., Cleveland, in production of high quality steel nuts on its forging machines. Illustrations show the forging machines and their products.

HEATING SYSTEMS—Skinner Brothers Mfg. Co., Inc., 1400 South Vandeventer avenue, St. Louis, has issued a bulletin on control of heat and heating cost by use of the company's new system. It presents information on this plan for heating industrial establishments.

BRONZE ALLOY — Bridgeport Brass Co., Bridgeport, Conn., has issued a booklet on duronze, a silicon bronze the company has developed for uses where high strength is desired, giving qualities not possible with brass. The booklet describes the alloy and illustrations show uses to which it is being put.

BOLTS AND NUTS—Dardelet Threadlock Corp., 120 Broadway, New York, has issued a booklet on its nuts and bolts with special thread, for rail joints, frogs and guard rails. The type of thread and its locking action are described and illustrated. Advantages and economies of the new form of thread are summed up.

LUBRICATION—The current issue of the Texas Co. publication devoted to lubrication takes up lubrication recommendations and their development. This is a discussion of factors and design to be considered by the engineer in deciding the grade of lubricant for a given purpose. Illustrations give point to the text.

ACIDPROOF PIPE—American Manganese Steel Co., Southern Manganese Division, St. Louis, is distributing a bulletin carrying test reports of its acid-resisting pipe and fittings, with suggestions as to economy in use of this material in various ways. Its use in buildings where acid waste is conveyed is especially recommended.

TRACTORS—If there are places in the world where caterpillar tractors are not used or uses to which they have not been put, a current issue of the occasional publication by the Caterpillar Tractor Co., San Leandro, Calif., makes it difficult of belief. It is a picturebook covering such a range of use for tractors that it seems universal.

CASTINGS CHART—William J. Sweet Foundry Co., division of the Industrial Alloy Products Co., 8 Lister avenue, Newark, N. J., has prepared a revised chart of its range of chrome iron and chrome nickel iron alloys for corrosion and heat resistance, giving late information on applications of each. The chart also explains results from a new method of castings practice to obtain stainless iron castings suitable for polished surfaces.

ELECTRICAL PRODUCTS—General Electric Co., Schenectady, N. Y., has just issued its biennial general catalog. This supersedes all previous catalogs except those relating to railway, mine and industrial supplies. It contains 1146 pages and is fully illustrated. It is thumb-indexed in 16 sections: generation, wire and cable, distribution transformers, arresters and capacitors, voltage regulators, switching equipment, switch gear meters and instruments, lighting equipment, motors, motor applications, industrial control, transportation, industrial heating, miscellaneous and indexes.

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2		115 tons
5	WORM DRIVEN Ladle,	125 tons
44		125 tons
27		150 tons
2	WORM DRIVEN Ladle,	150 tons
3	WORM DRIVEN Ladle,	160 tons
2	WORM DRIVEN Ladle,	165 tons
3	WORM DRIVEN Ladle,	175 tons
27		175 tons
3	WORM DRIVEN Ladle,	200 tons
2		200 tons
1		225 tons
1		250 tons
3	WORM DRIVEN Ladle,	250 tons
1		275 tons
3		480 tons

STRIPPING CRANES

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1		125 tons
21		150 tons
17		200 tons
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3		150 tons
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